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# THE BOSTON MEDICAL AND SURGICAL JOURNAL

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VOLUME CLXXVIII

JANUARY—JUNE, 1918.

BOSTON

THE BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

1918

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## INDEX TO VOLUME CLXXVIII.

## AUTHORS.

## A

- Abel, Mary A. Adequate community organization for health educational work, 850.
- Anderson, V. V., and Leonard, Christine M. A study of the physical condition of one thousand delinquents seen in court, 803.
- Ayers, Charles E. Fracture of the neck of the femur: report of three cases, 298.
- Ayres, Samuel, Jr. The application of anaphylactic skin tests to general medicine, 697.

## B

- Baldwin, Edward R. Research problems in tuberculosis, 105.
- Beckler, E. A. A plea for a quick bacteriological diagnosis of diphtheria, 531.
- Benedict, Francis G. A portable respiration apparatus for clinical use, 667.
- Bieberbach, Walter D. Gonorrhea in young male children, and its treatment, 259.
- Bigelow, Alice H. The relation of the ductless glands to gynecology: physiological and therapeutic, 715.
- Billings, Bernice W. Follow-up work in tuberculosis in the small towns and villages of Massachusetts, 861.
- Borden, Richard P. Hospital and vocational training, 634.
- Bowen John T. Progress in dermatology, 20; Report on dermatology, 740.
- Bowditch, Vincent Y. Introductory remarks by the president, fourth annual meeting of the Massachusetts Anti-Tuberculosis League, 847.
- Brasch, W. F. Lithiasis with bilateral renal involvement, 292.
- Briggs, J. Emmens. Surgery of the biliary tract, 116.
- Briggs, L. Vernon. Mental conditions disqualifying for military service, 141.
- Bristol, Leverett D. On the possible nature of measles, 437.
- Burt, C. E. Trench sanitation, 567.

## C

- Champion, Merrill E. The venereal disease problem in Massachusetts, 483.
- Cheever, David, Forsyth, Thomas A., and Gay, George W. Dedication of the Cheever Amphitheatre, 449.
- Clap, Edmund W. Report of progress in ophthalmology, 56.
- Courtney, J. W. Some aspects of forensic psychiatry, 313.
- Cronin, M. J. Physical selection in its relation to heart and lung conditions, 187.
- Curran, John F. Relation of industrial surgeon to industry and to society, 215; Welfare insurance and the factory, 394.

## D

- Dana, Harold W. Recruiting notes, 255.
- Davis, Michael M., Jr. Dispensaries in Massachusetts, particularly in Boston, 432.
- Davis, Michael M., Jr., and Warner, Andrew R. The beginning of dispensaries, 712.

- Day, Hilbert F. Observations on disabled shoulders, with especial reference to sub-acromial bursitis, 389.
- Dearborn, George Van Ness. Some relations of exercise to nutrition, 458; Get lean and—homely, 887.
- Deering, George E. Efficiency in the examination of school children, 498.
- DeNormandie, Robert L. Obstetrics, 76.
- Donoghue, Francis D. Medical competence and hospital efficiency, 594; The relation of the doctor to Workmen's Compensation, 693.
- Downing, Andrew F. The problem of physical selection applied to large numbers of applicants, 177.
- Drew, Charles A. The standardization of hospitals, 527.

## E

- Eloesser, L. Wounds of the joints, 555.

## F

- Field, Martin D. Gastro-duodenal perforation: a new diagnostic sign, 220.
- Fischbein, Louis. Causes and treatment of chronic hyperacidity, heartburn and sour regurgitation, 86.
- Floyd, Cleaveland. Artificial pneumothorax and pulmonary tuberculosis, 349.
- Forsyth, Thomas A., Gay, George W., and Cheever, David. Dedication of the Cheever Amphitheatre, 449.

## G

- Gammons, Herbert F. Artificial pneumothorax, 90; Climate in tuberculosis, 364; The modern treatment of tuberculosis, 532; Spontaneous pneumothorax complicating pulmonary tuberculosis, 637; Pathological classifications of pulmonary tuberculosis, 809.
- Gay, George W., Cheever, David, and Forsyth, Thomas A. Dedication of the Cheever Amphitheatre, 449.
- Gould, A. G. The control of a smallpox epidemic by vaccination, 395.
- Gray, Horace. Lipoids in 131 diabetic bloods, 16, 50, 91, 120, 156; Army tuberculosis examinations, 799.
- Greenough, Robert B. Radium in the treatment of carcinoma of the buccal cavity, 598.

## H

- Haberman, J. Victor. A psychopathic constitution resembling so-called moral insanity, and its interpretation, 194.
- Harrington, M. A. With the R.A.M.C. in France, 631.
- Harrington Thomas F. Health in war industries, 453.
- Hatfield, Charles J. War and tuberculosis, 863.
- Haves, John B., 2d. The value of the physician and of the nurse in social service work in tuberculosis; the responsibility of each to the state and to the patient, 381; Random remarks on tuberculosis, 539.
- Hilliard, C. M. Relative values in anti-tuberculosis work, 853.
- Hoch, Theodore A. A case of cerebrospinal meningitis successfully treated by intraspinal and intraventricular administration of anti-meningitis serum, 327.
- Holmes, George W. The x-rays in phthisis, 71.
- Howell, William W. The primary lesion of tuberculosis; its significance, diagnosis and treatment, 152.
- Hyman, Clarence H., and Leary, Timothy. The treatment of anthrax with normal (beef) serum. Review of the literature with report of a case. (studies in serum therapy vii.), 318.

## J

Jones, Lyman Asa. The Massachusetts venereal disease program, 236.

## K

Kelley, Eugene R. The Massachusetts venereal disease program, 100, 208.

Kimpton, A. R. Transfusion. Experiences in over two hundred cases, 351.

King, Howard Dudley. The army surgeon of other days, 258.

## L

Ladd, W. E. Congenital pyloric stenosis, 767.

Lawrence, C. H., and Shattuck, F. C. Acute lobar pneumonia, 245.

Leonard, Christine M., and Anderson, V. V. A study of the physical condition of one thousand delinquents seen in court, 803.

Leary, Timothy. Some modern medical problems, 422.

Leary, Timothy, and Hyman, Clarence H. The treatment of anthrax with normal (beef) serum. Review of the literature with report of a case. (Studies in Serum therapy vii.), 318.

Leen, Thomas F. Recent treatment of lobar pneumonia, 251.

Lewis, D. M. Membranous croup, 47; Differentiation of streptococci, 222; The use of and value of statistics, 503; Prevention in public health, 571; A study of diphtheria carriers, 602; The control of Communicable diseases, 772.

Lloyd, Henry D. Primary syphilis of eyelid, with report of a case, 609.

Lewrey, Lawson G. Differential diagnosis in psychiatry: a comparison of symptoms in various disease states, 703.

## M

MacDonald, Arthur. Identification of soldiers after death by head measurements, 807.

Marshall, Herman W. Back troubles, A review of the present situation from a series of hospital cases; and a discussion of musculo-ligamentous causes, 279; Revised ideas concerning foot defects and orthopedic footwear, 428; Structural deformities versus functional efficiencies as objects of treatments, 708.

McCarthy, E. A. The after-care of the war cripple, 37.

McKee, Elmore M. The venereal problem—the army viewpoint, 467.

McMurtre, Douglas C. Re-educating German war cripples at Dusseldorf, 182.

Moore, G. A. The Carrel-Dakin method of treating septic wounds: its application to civil surgery, 109; Mobilization of the knee joint in suspension-traction treatment of fracture of the femoral shaft, 736.

Morse, John Lovett. Progress in pediatrics. A resume of the literature of infantile scurvy during the past five years, 160.

## O

O'Brien, Frederick W. Preoperative diagnosis by Roentgen ray of hair cast of stomach, 896.

Ordway, Mabel D. A plea for a legitimate trial of scientific medical methods in chronic intestinal conditions before resorting to surgical interference, 606.

Osato, Michael. Paralysis agitans and myopathic dystrophy occurring in uncle and nephew, with evidences of internal glandular dyscrasia in the latter, 123.

Otis, Edward O. The examination of soldiers for tuberculosis in the U. S. Army, 33; The place of the home, the dispensary, the sanatorium or the hospital in the treatment of tuberculosis (value of diet, rest, fresh air, etc.), 417.

## P

Packard, Frederick H. Suggestions on the care of mental cases, 211.

Pemberton, Frank A. Hemorrhage from the uterus in the non-pregnant woman, 485.

Phaneuf, L. E. Ventral fixation of the uterus, causing

dystocia. Ruptured uterus following version for transverse presentation. Hysterectomy and recovery. Report of a case, 55.

Pierson, Philip H. Spontaneous pneumothorax, 385.

Porter, W. T. Traumatic shock, 657.

Pratt, Joseph H. The physical examination in pulmonary tuberculosis, 519.

Preble, William E. Focal infection and rheumatism, 82.

Prenn, Joseph. Hearing test apparatus, 896.

## R

Rackemann, Francis M. A clinical study of 150 cases of bronchial asthma, 770.

Rappleye, W. C. A study of the kidney function in senility, 191.

Reckord, Frank F. D. The anatomy and physiology of the respiratory tract, 680.

Redden, William R. Meningococcus carriers: preliminary report from first naval district, 623.

Rubin, I. C. Vaginal discharge in children; study of 255 selected cases, with special reference to the question of the diagnostic and specific value of smear examinations, 147.

Rushmore, Stephen. Progress in gynecology, 533, 574.

## S

Sever, James Warren. The diagnosis of the conditions causing painful and irritable backs, 323.

Shattuck, F. C., and Lawrence, C. H. Acute lobar pneumonia, 245.

Sisson, Warren R. A critical review of intestinal bacteriology in relation to certain diarrheas of infants, 492.

Smith, William H. The differential diagnosis of pulmonary tuberculosis, 1.

Sobotky, Irving. Severance of the chorda tympani nerve, 224.

Spofoord, Ethel M. Annual report of the Massachusetts Anti-Tuberculosis League, 858.

Staebler, Anna M. Conservation of man power in industry, 868.

Standish, Myles. Annual discourse. The socialization of the practice of medicine, 837.

Stedman, Henry R. Recent progress in psychiatry, 638.

## T

Taylor, J. Danforth. The physician and psychology, 730.

Tenney, Benjamin. The recognition of surgical kidney, 44; Renal and ureteral stone, 731.

Tracey, Edward A. The red streak: a sign of disease, 392; Idiopathic epilepsy a sympatheticopathy, 775, 810, 871, 897.

## W

Warner, Andrew R., and Davis, Michael M., Jr. The beginning of dispensaries, 712.

Watters, W. H. Surgical sutures as causes of wound infection, 530.

Wheatley, Frank, Jr. Roentgenology in the American Army, 727.

White, G. Benjamin. Laboratory methods in tuberculosis, 175.

White, Charles J. The treatment of eczema in childhood, 5.

White, Franklin W. Some effects of massage on the colon, 48.

Whitehill, G. E. Organized provision for the care of the sick in Massachusetts, 217.

Whittemore, Wyman. The surgical treatment of empyema, 360.

Wilkins, George C. Unnecessary operations, 347.

Williams, Fred R. The serum-conserved dressing for industrial wounds, 452.

Willius, F. A. Paroxysmal tachycardia of ventricular origin, 40.

## Y

Young, James K. Gunshot wound of the posterior cord of the brachial plexus, 501.



## SUBJECTS.

## A

- American Climatological and Clinical Association** program, 796.
- American Hospitals and surgeons in France**, 344.
- American Medical Association**, annual meeting, 481.
- Annual Discourse**, Massachusetts Medical Society: The socialization of the practice of medicine, Myles Standish, M.D., S.D., 837.
- Annual Report of the Surgeon-General**, U. S. Navy, 1917, 385.
- Anthrax in Massachusetts**, 132; The treatment of anthrax with normal (beef) serum. Review of the literature with report of a case. (Studies in serum therapy, vii.), Clarence H. Hyman, M.D., and Timothy Leary, M.D., 818.
- Antiseptics in surgery**, 882.
- Aridity of heated rooms**, 721.
- Army Surgeon of other days**, Howard Dudley King, M.D., 258.
- Army Tuberculosis examinations**, Horace Gray, M.D., 799.
- Artificial Pneumothorax**, Herbert F. Gammons, M.D., 90; Artificial pneumothorax and pulmonary tuberculosis, Cleaveland Floyd, M.D., 349.
- Attendance at medical meetings**, 546.

## B

- Back Troubles**. A review of the present situation from a series of hospital cases; and a discussion of musculo-ligamentous causes, Herman W. Marshall, M.D., 279; the diagnosis of the conditions causing painful and irritable backs, James Warren Sever, M.D., 323.
- Biliary Tract**, surgery of the, J. Emmons Briggs, M.D., F.A.C.S., 116.
- Biologic Products**, notes on, from the State Department of Health, 103.
- Blood Pressure findings in disease**, 880.
- Book Reviews**.  
 Annual reprint of the reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1916, 611.  
 A text-book of histology, Frederick R. Bailey, 400.  
 Occupational Therapy, George Edward Barton, 226.  
 The principles of gynecology, W. Blair Bell, 227.  
 The sex complex, W. Blair Bell, 718.  
 Blood transfusion, hemorrhage and the anemias, Bertram Bernheim, 323.  
 The year-book of the Bureau of Preventable Diseases, John S. Billings, 399.  
 A treatise on regional surgery, edited by John Fairbairn Binnie, 906.  
 Surgery and diseases of the mouth and jaws, Wilray Papin Blair, 906.  
 Ligations and amputations, Prof. A. Broca, 226.  
 The control of hunger in health and disease, Anton Julius Carlson, 366.  
 A study in hospital efficiency as demonstrated by the case report of the first five years of a private hospital, E. A. Codman, 125.  
 Diseases of Women, Henry Sturgeon Crossen, 227.  
 Operative gynecology, Harry Sturgeon Crossen, 304.  
 The healthy girl, Mrs. Joseph Cuning and A. Campbell, 269.  
 The secretion of urine, A. R. Cushny, 401.  
 Gynecology—the practical medicine series, edited by Emelius C. Dudley, 226.  
 Venesection, Walton Forrest Dutton, 332.  
 Elements of pediatrics for medical students, Rowland G. Freeman, 879.  
 War nursing, Minnie Goodnow, 878.  
 Infant feeding, Clifford G. Grules, 878.  
 The intensive treatment of syphilis and locomotor ataxia by Aachen methods, Reginald Hayes, 905.  
 The institutional care of the insane in the United

- States and Canada, edited by Henry M. Hurd, 904.
- Urology: diseases of the urinary organs: the venereal diseases, Edward L. Keyes, Jr., M.D., 904.
- Common diseases of the male urethra, Frank Kidd, 905.
- The new system of gynecology, edited by Thomas Watts Eden and Cuthbert Lockyer, 198.
- An inquiry into the principles of treatment of broken limbs, William F. Fluhrer, 866.
- Diagnosis from ocular symptoms, Matthias L. Foster, 401.
- Manual of psychiatry, I. R. deFursac and A. J. Rosanoff, 366.
- Clinical laboratory technic for nurses, Anna L. Gibson, 23.
- Kirk's handbook of physiology, Charles W. Greene, 164.
- Candy medication, Bernard Hantus, 304.
- Pathological lying, accusation, and swindling, William Healey and Mary Tenney Healy, 824.
- Clinical lectures on infant feeding, Lewis Webb Hill and Jesse Robert Gerstley, 507.
- Diet for children, Louise E. Hogan, 398.
- Universal military training, Lucien Howe, 440.
- Radium therapy in cancer, Henry H. Janeway, 197.
- The practice of pediatrics, Charles Gilmore Kerley, 783.
- Text-book of surgical operations, Prof. Fedor Krause and Emil Heymann, 399.
- Handbook of gynecology, Henry Foster Lewis and Alfred de Roulet, 227.
- The organism as a whole, Jacques Loeb, 399.
- The conduction of the nervous impulse, Keith Lucas, 879.
- Principles of diagnosis and treatment in heart affections, Sir James Mackenzie, 398.
- Standard surgical dressings, Nellie A. MacKenzie, 368.
- Manual of splints and appliances for Medical Department of the United States Army, 751.
- White and Martin's genito-urinary surgery and venereal diseases, Edward Martin, Benjamin A. Thomas, and Stirling W. Moorhead, 507.
- Injuries of the face and jaw and their repair, and the treatment of fractured jaws, P. Martinier, 907.
- Collected papers of The Mayo Clinic, 905, 906.
- A text-book on organic chemistry, E. V. McCollum, 718.
- A bibliography of the war cripple, Douglas C. McMurtrie, 879.
- The medical clinics of North America, 59.
- The practical medicine series, edited by Charles L. Mix and John B. Murphy, 440.
- Aids to bacteriology, C. G. Moor, 440.
- Surgical contributions, Rutherford Morison, 228.
- The biology of tumors, C. Mansell Moulin, 399.
- Diseases of the chest and principles of physical diagnosis, George William Norris and Henry R. M. Landis, 197.
- Physical exercise for invalids and convalescents, Edward H. Ochsner, 125.
- The pathology of nephritis, William Ophuls, 440.
- Skin and venereal diseases, edited by Oliver S. Ormsby and James Herbert Mitchell, 507.
- The spleen and anemia. Experimental and clinical studies, R. M. Pearce, E. B. Krumbhaar, and C. H. Frazier, 823.
- An intermediate textbook of physiological chemistry, with experiments, C. J. V. Pettibone, 904.
- Clinical surgical diagnosis for students and practitioners, Prof. F. deQuervain, 198.
- Three clinical studies in tuberculous predisposition, W. C. Rivers, 228.
- Treatise on fractures, John B. Roberts and James A. Kelly, 824.
- A system of case-taking, G. W. Ross and Julian Loudon, 401.
- Notes on the causation of cancer, Hon. Rollo Russell, 905.
- A manual of organic materia medica and pharmacology, Lucius E. Sayre, 397.
- Manual for institution libraries, Carrie E. Scott, 197.
- Neurosyphilis. Modern systemic diagnosis and treatment, E. E. Southard and H. C. Solomon, 678.
- The law of the heart, Ernest H. Starling, 543.
- A laboratory manual of organic chemistry, Matthews Steel, 400.
- The surgical clinics of Chicago, 59.
- Diseases of the skin, Richard L. Sutton, 164.
- Pocket formulae, E. Quin Thornton, 578.
- Habits that handicap, Charles B. Towns, 401.
- United States naval medical bulletin, January, 1918, 197.

- Lectures on medicine—a handbook for nurses, Chalmers Watson, 578.  
 Traumatic pneumonia and traumatic tuberculosis, F. Parkes Weber, 398.  
 Wound infections, Colonel Sir Almroth E. Wright, 400.  
 Boston City Hospital Alumni Association, 477.  
 British Marriage Rate and the war, 236.  
 Bronchial Asthma, a clinical study of 150 cases, Francis M. Rackemann, M.D., 770.

## C

- Camp Devens, medical books and periodicals at, 755.  
 Cancer Commission of Harvard University, annual report of, 580.  
 Carbohydrates in diabetes, 786.  
 Carcinoma of the Buccal Cavity, radium in the treatment of, Robert B. Greenough, M.D., 598.  
 Care of Sick, organized provision for the, in Massachusetts, G. E. Whitehill, M.D., 217.  
 Carrel-Dakin Method of treating septic wounds; its application to civil surgery, G. A. Moore, M.D., 109.  
 Censors' Examinations, 588.  
 Centralization of Authority versus unpaid boards of trustees, 305.  
 Cheever, Amphitheatre, dedication of, 449.  
 Children First, 411.  
 Children's Year, 645; program for "The Children's Year" in New York City, 790.  
 Chorda Tympani Nerve, severance of, Irving Sobotky, M.D., 224.  
 Chronic Intestinal Conditions, a plea for a legitimate trial of scientific medical methods in, before resorting to surgical interference, Mabel D. Ordway, M.D., 606.  
 Comparative Statistics on physical examinations of pupils of the Boston public schools from December 1, 1915, to March 1, 1918, 915.  
 Competitive Examination for candidates for positions in the Massachusetts State Department of Health, and regulations governing appointment, 379.  
 Cold-Pack Canning and Botulism, 171.  
 Congenital Pyloric Stenosis, W. E. Ladd, M.D., F.A.C.S., 767.  
 Conscription of Physicians, a plan for, 203.  
 Conservation of Sugar, alcohol, and glycerin, 477.  
 Control of Smallpox epidemic by vaccination, A. G. Gould, Ph.M., M.D., 395.  
 Control of Communicable Diseases, D. M. Lewis, M.D., 772.  
 Communicable Diseases, resume of, in Massachusetts, 68, 655, 795.  
 Correspondence. More medical officers needed in the army and navy, J. B. Blake, W. L. Burrage, 554; A children's pavilion at the Sharon Sanatorium, Vincent Y. Bowditch, 553; Regulation of the practice of medicine, Walter P. Bowers, 552; Vesalius and Louvain, Isador H. Coriat, 210; Surgical syphilis in the eighties, William Pearce Coues, 766; Address before the Governor of New York at the hearing on the bill for a narcotic drug commissioner, John P. Davin, 765; A Scottish hair-cast case, Alfred Ela, 518; Sugar and service, Paul W. Goldsburly, 70; Standardization of medical publications, H. P. Greeley, 797; A correction, George W. Holmes, 797; Compulsory antityphoid inoculation, W. W. Keen, 692; American doctors in England, Mary Fifield King, 244; Bathing in Russia, M. J. Konikow, 518; Doctors and the Medical Reserve Corps, Clarence B. Livingston, 140; Obstetrics and the medical profession, Charles Malone, 210; A protest and a defense, E. A. McCarthy, 886; Toxicity of arsphenamine and neo-arsphenamine, G. W. McCoy, 554; A letter from the trenches, Frank Piper, 622; Bacteriology of cerebrospinal meningitis, Wm. D. Reid, 415; The treatment of pneumonia, Beverley Robinson, 346; Navy's call for binoculars, spy-glasses and telescopes—"the eyes of the Navy," Franklin D. Roosevelt, 140; Reporting of accidents from local

anesthetics, Torald Sollmann and R. A. Hatcher, 173; Procaine and novocaine identical, Julius Stiegletz, 916; Venereal drug legislation, James Brown Thornton, 416; Alcohol in medicine, Charles W. Townsend, 70; Vaccination certificates, Samuel B. Woodward, 312.

Council of National Defense, 685; The General Medical Board of the Council of National Defense, 689; Medical Section of the Council of National Defense, 719; meeting of state committees of the Medical Section of the Council of National Defense, 760; List of Massachusetts physicians in the service of the Army, Navy and Red Cross, 372.

## D

- Delinquents, a study of the physical condition of one thousand, seen in court, V. V. Anderson, M.D., M.A., and Christine M. Leonard, M.D., 803.  
 Dermatology, progress in, John T. Bowen, M.D., 20.  
 Diabetic Bloods, lipoids in 131, Horace Gray, M.D., 16, 50, 91, 120, 156.  
 Diagnosis of the conditions causing painful and irritable backs, James Warren Sever, M.D., 323.  
 Differential Diagnosis of pulmonary tuberculosis, William H. Smith, M.D., 1.  
 Diarrheas in Infants, a critical review of intestinal bacteriology in relation to, Warren R. Sisson, M.D., 492.  
 Diphtheria Carriers, a study of, D. M. Lewis, M.D., 602.  
 Diphtheria, a plea for a quick bacteriological diagnosis of, E. A. Beckler, 581.  
 Dispensaries in Massachusetts, particularly in Boston, Michael M. Davis, Jr., Ph.D., 432; the beginning of dispensaries, By Michael M. Davis, Jr., and Andrew R. Warner, M.D., 712.  
 Drug Addiction, 835.  
 Dystrophy. Paralysis agitans and myopathic dystrophy occurring in uncle and nephew, with evidences of internal glandular dyscrasia in the latter, Michael Osnato, M.D., 123.  
 Drug Bill of State Department of Health, 335.  
 Ductless Glands, the relation of, to gynecology: physiological and therapeutic, Alice H. Bigelow, A.B., M.D., 715.

## E

- Eczema, the treatment of, in childhood, Charles J. White, M.D., 5.  
 Editorials. Organic lesions in shell shock, 24; Public health value of universal physical examinations, 25; Every doctor in the Medical Reserve Corps, 26; Shell shock and the American Army, 60; Standardization of school hygiene, 62; The limit of recovery in hemiplegia, 63; Individual income tax returns, 64; The program of the State Department of Health against venereal disease, 95; Nurses in the United States Army, 96; The military significance of cerebrospinal meningitis, 96; Treatment of leukemia, 97; Military psychiatry, 98; The government war-risk insurance, 126; Prenatal care and infant mortality, 126; Health legislation recommended by State Department of Health, 127; Massachusetts Medical Society dues, 127; Military anti-tuberculosis program perfected, 165; Massachusetts Society for Mental Hygiene, 167; War-risk insurance, 167; Mobilizing the profession for war, 199; The needs of the medical service, 199; War-risk insurance, 200; War nephritis, 229; Reports of hospitals for the insane, 230; The venereal disease program in Massachusetts, 231; The man who stayed at home, 270; War-risk insurance, 271; Pneumonia, 271; Centralization of authority versus unpaid boards of trustees, 305; State quotas of babies to be saved during children's year, 306; Advanced rank for medical officers, 333; Volunteer medical service corps, 334; State Department of Health drug bill, 335; Annual report of the Surgeon-General, U. S. Navy, 1917, 335; The new health commissioner of Massachusetts, 336; Trench foot, 367; Vocational rehabilitation of disabled soldiers, 368; Reduction in pay of officers in the field, 369; The causes of eyestrain, 402; Annual report of the Philippine Health Service for 1916, 403; The scope of mental hygiene, 404; Indications for local anesthesia, 405; Annual report of the Boston Medical Library, 406; Infective jaundice and Weil's dis-

ease, 441; Incipient and advanced tuberculosis, 442; The serum treatment of pneumonia, 443; Definition of infective stage of venereal disease, 444; Grave of a famous British surgeon, 444; The significance of vascular hypertension, 475; Vaccine in the treatment of whooping cough, 476; The food value of the banana, 476; Boston City Hospital Alumni Association, 477; Conservation of sugar, alcohol, and glycerin, 477; The control of venereal diseases in Massachusetts, 508; Immunization against typhus fever, 508; The status of tonsil operations, 544; School inspection and sanitation in extra-cantonment zones, 545; The reclamation of the disabled, 545; Attendance at medical meetings, 546; Medical Reserve Corps, 579; Annual report of the cancer commission of Harvard University, 580; Method for field study of industrial fatigue, 580; The present smallpox situation, 581; Third annual report of the Forsyth Dental Infirmary, 582; School of instruction on public health, 583; The fight against venereal infection, 612; Annual report of the State Department of Health, 614; Secretaries for physicians, 615; Massachusetts free school on public health, 616; Letters from two patriotic Boston physicians, 644; The children's year, 645; An imperative appeal for medical officers, 646; Stand behind the boys, 646; Enrollment in the Naval Reserve Force, 647; Massachusetts school of public health, 647; The present status of venereal prophylactics, 679; The one hundred and fourth annual report of the Massachusetts General Hospital, 681; Massachusetts school of public health, 682; Medical section of the Council of National Defense, 719; Rest in cardiac insufficiencies, 720; The aridity of heated rooms, 721; Low pulse pressure, 722; Naval Reserve needs male nurses and pharmacists, 722; The nursing crisis, 752; Civil and military mortality, 753; Urban and rural health conditions, 753; Surgery in the aged, 754; Medical books and periodicals at Camp Devens, 775; Sickness insurance or sickness prevention? 784; Phases of industrial fatigue, 785; Carbohydrates in Diabetes, 786; The simulation of disease, 787; Vitamine balancing, 825; The war and internes in special hospitals, 826; Four-day public health school, 827; Massachusetts Medical Society—One hundred and thirty-seventh anniversary, 828; Reporting of gonorrhea and syphilis, 828; Blood pressure findings in disease, 880; Tuberculosis and pregnancy, 881; Malignant degenerations, 881; Antiseptics in surgery, 882; Medical aspects of the man power bill, 908; National Tuberculosis Association, 910; Elks' hospital, 912; Official names of licensed drugs, 912; Men who registered June 5th may enroll in the Naval Reserve Force, 913.

Elks' Hospital, 912.

Empyema, the surgical treatment of, Wyman Whittemore, M.D., F.A.C.S., 860.

English Pioneers in naval medicine, 206.

Efficiency in the examination of school children, George E. Deering, M.D., 498.

Epilepsy. Idiopathic epilepsy a sympathicopathy, Edward A. Tracy, M.D., 775, 810.

Eye strain, the causes of, 402.

## F

Food Value of the banana, 476.

Foot Defects. Revised ideas concerning foot defects and orthopedic footwear, Herman W. Marshall, M.D., 428.

Forsyth Dental Infirmary, third annual report of, 582.

Femur, fracture of the neck of: report of three cases, Charles E. Ayers, M.D., 298.

## G

Gastro-duodenal Perforation: a new diagnostic sign, Martin T. Field, M.D., 220.

Get Lean and—Homely, George Van Ness Dearborn, M.D., 387.

Grave of a famous British surgeon, 444.

Gaitre in Alberta, 130.

Gonorrhea and Syphilis, reporting of, 828.

Gonorrhea in young male children, and its treatment, Walter D. Bieberbach, M.D., 259.

Gordon, Dr. John Alexander, memorial resolutions for, 655.

Gunshot Wound of the posterior cord of the brachial plexus, James K. Young, M.D., F.A.C.S., 501.

## H

Hair Cast of Stomach, preoperative diagnosis by Roentgen ray of, Frederick W. O'Brien, M.D., 396.

Health Commissioner. The new Health Commissioner of Massachusetts, 386.

Health Conditions, urban and rural, 753.

Health in War Industries, Thomas F. Harrington, M.D., 453.

Health Legislation recommended by State Department of Health, 127.

Hearing Test Apparatus, Joseph Frenn, M.D., 896.

Hemiplegia, the limit of recovery in, 63.

Hemorrhage from the uterus in the non-pregnant woman, Frank A. Pemberton, M.D., 485.

Hippocratic Manuscript, a new, 237.

Hospital and vocational training, Richard P. Borden, 634.

Hospital Efficiency, medical competence and, Francis D. Donoghue, M.D., 594.

Hospitals for the Insane, reports of, 230.

Hospital Needs urgent, 691.

Hygiene and sanitation in Jerusalem, 412.

Hyperacidity, chronic, causes and treatment of. Heartburn and sour regurgitation, Louis Fischbein, M.D., 86.

## I

Identification of soldiers after death by head measurements, Arthur MacDonald, 807.

Idiopathic Epilepsy a sympathicopathy, Edward A. Tracy, M.D., 775, 810, 871, 897.

Industrial Fatigue, methods for field study of, 580; phases of industrial fatigue, 785.

Industrial Surgeon, relation of to industry and to society, John F. Curran, M.D., 215.

Infantile Scurvy. Progress in pediatrics. A resume of the literature of infantile scurvy during the past five years, John Lovett Morse, A.M., M.D., 160.

Instructive District Nursing Association, 170.

Internes, The war and, in special hospitals, 826.

Intestinal Bacteriology, A critical review of, in relation to certain diarrheas of infants, Warren R. Sisson, M.D., 492.

## J

Janeway, Dr., A British tribute to, 238.

Jaundice. Infectious jaundice in the United States, 793; Infective jaundice and Weil's disease, 441.

Joints, Wounds of, L. Eloesser, M.D., 555.

## K

Kidney Function, A study of the, in senility, W. C. Rappleye, A.B., 191.

Kidney. The recognition of surgical kidney, Benjamin Tenney, M.D., F.A.C.S., 44.

## L

Laboratory Methods in tuberculosis, G. Benjamin White, Ph.D., 175.

Letters from two patriotic Boston physicians, 644.

Lettson and the London Medical Society, 239.

Leukemia, Treatment of, 97.

Lipoids in 131 diabetic bloods, Horace Gray, M.D., 16, 50, 91, 120, 156.

Lithiasis with bilateral renal involvement. W. F. Braasch, M.D. 292.

Local Anesthesia, indications for, 405.

Low Pulse Pressure, 722.

## M

- Malignant Degenerations**, 881.
- Malnutrition** among school children. Result of a recent investigation, 410.
- Man Who Stayed at Home**, The, 270.
- Mandrake**, The, in folk-medicine, 131.
- Massachusetts Anti-Tuberculosis League**. Fourth annual meeting, Boston, April 11, 1918. Introductory remarks by the president, Vincent Y. Bowditch, M.D., 847; Adequate community organization for health educational work, Mary A. Abel, 850; Relative values in anti-tuberculosis work, Professor C. M. Hilliard, 853; Annual report of the Massachusetts Anti-Tuberculosis League, 1918, Ethel M. Spofford, 858; Follow-up work in tuberculosis in the small towns and villages in Massachusetts, Bernice W. Billings, 861; War and tuberculosis, Charles J. Hatfield, M.D., 863; Conservation of man power in industry, Anna M. Staebler, 868.
- Massage**, Some effects of on the colon, Franklin W. White, M.D., 48.
- Massachusetts General Hospital**, The one hundred and fourth annual report, 681.
- Massachusetts Medical Society**. Utilization of cripples in industry, 67; Notes from the district societies, 68, 100, 235, 480, 585, 621, 649, 724, 760; Massachusetts Medical Society dues, 127; Officers of the Society and of the District Medical Societies, 203; Stated meeting of the Council, 274; Program of the one hundred and thirty-seventh anniversary, 833; One hundred and thirty-seventh anniversary, 828; Annual discussion: The socialization of the practice of medicine, Myles Standish, M.D., S.D., 837.
- Maudsley, Henry**, M.D. Lond., F.R.C.P. Lond., LL.D. Edin., 308.
- Measles**, On the possible nature of, Leverett D. Bristol, M.D., Dr.P.H., 437.
- Medical Aspects** of the man power bill, 908.
- Medical Dramatist**, A, 312.
- Medical Officers**, Advanced rank for, 333; An imperative appeal for medical officers, 646.
- Medical Problems**, Some modern, Timothy Leary, M.D., 422.
- Medical Progress**. Progress in dermatology, John T. Bowen, M.D., 20; Report of progress in ophthalmology, Edmund W. Clap, M.D., 56; Progress in pediatrics. A resume of the literature of infantile scurvy during the past five years, John Lovett, Morse, A.M., M.D., 160; Progress in gynecology, Stephen Rushmore, M.D., 538, 574; Recent progress in psychiatry, Henry R. Stedman, M.D., 638; Report on dermatology, John T. Bowen, M.D., 740.
- Medical Reserve Corps**, 579; Every doctor in the Medical Reserve Corps, 26.
- Medical Service**, The needs of the, 199.
- Meningitis**. A case of cerebrospinal meningitis successfully treated by intraspinal and intraventricular administration of anti-meningitis serum, Theodore A. Hoch, M.D., 327; The military significance of cerebrospinal meningitis, 96.
- Membranous Croup**, D. M. Lewis, M.D., 47.
- Men Who Registered** June 5th may enroll in the Naval Reserve Force, 913.
- Meninococcus Carriers**: Preliminary report from first naval district, Assistant Surgeon William R. Redden, U.S.N.R.F., 623.
- Mental Cases**, Suggestions on the care of, Frederick H. Packard, M.D., 211.
- Mental Conditions** disqualifying for military service, Major L. Vernon Briggs, M.R.C., U. S. Army, 141.
- Mental Hygiene**, Massachusetts Society for, 167; The scope of mental hygiene, 404.
- Mesopotamia**, Medical matters in, 311.
- Military anti-tuberculosis** program perfected, 165.
- Miscellany**. Free public lectures on medical subjects, 32; Resume of communicable diseases in Massachusetts for November, 1917, 68; The Massachusetts venereal disease program, 100; Mortality statistics for 1917, from the Health Department, Boston, 102; Notes on biologic products from the State Department of Health, 103; Tuberculosis and the war, 104; Goitre in Alberta, 130; The mandrake in folk-medicine, 131; War committee for the utilization of hospital facilities, 132; Anthrax in Massachusetts, 132; Shell shock among troops, 133; Increase in tuberculosis, 134; Principal causes of death, 134; The first semiannual report of the war council of the American Red Cross, 136; Resolutions on the death of Mr. Rueter, 170; Instructive District Nursing Association, 170; Reconstruction and re-education of United States soldiers, 171; Cold-pack canning and botulism, 171; The Massachusetts venereal disease program, 172; A plan for the conscription of physicians, 203; English pioneers in naval medicine, 206; Occupational diseases, 207; The Massachusetts venereal disease program, 208; The Massachusetts venereal disease program, 236; The British marriage rate and the war, 236; A new Hippocratic manuscript, 237; Orthopedic surgery in war, 237; A British tribute to Dr. Janeway, 238; Lettoms and the London Medical Society, 239; Henry Maudsley, M.D. Lond., F.R.C.P. Lond., LL.D., Edin., 308; Retirement of General Keogh, 310; Medical matters in Mesopotamia, 311; A medical dramatist, 312; Rehabilitation of disabled soldiers and sailors, 339; Venereal disease as a menace to the nation, 341; Tetanus in British home military hospitals, 342; American hospitals and surgeons in France, 344; Red Cross work with the United States Army, 345; Medical matters in Palestine, 346; Memorial to Dr. Cutts, 379; Competitive examination for candidates for positions in the Massachusetts State Department of Health, and regulations governing appointment, 379; Malnutrition among school children. Result of a recent investigation, 410; Children first, 411; Hygiene and sanitation in Jerusalem, 412; More nurses needed for war service, 414; Ventilation after fumigation, 414; Application of ozone to purification of swimming pools, 415; Annual meeting, American Medical Association, 481; Resolutions in memory of Dr. Blake, 481; The control of venereal diseases in Massachusetts, 514; Neurologists and psychiatrists for the Medical Department, 517; The bacteriology of poliomyelitis, 550; Suggestions for State Board of Health regulations, 586; Municipal Civil Service Commission, New York, 588; Censors' examinations, 588; Owen and Dyer bill, 650; Resume of Communicable diseases in Massachusetts for March, 1918, 655; Memorial resolutions for Dr. John Alexander Gordon, 655; Council of National Defense, 685; The General Medical Board of the Council of National Defense, 689; Hospital needs urgent, 691; Convocation and four-day school of public health, 725; Meeting of State Committees of the Medical Section of the Council of National Defense, 760; Program for "The Children's Year" in New York City, 790; Vocational rehabilitation of war cripples, 791; Infectious jaundice in the United States, 793; Resume of communicable diseases in Massachusetts for April, 1918, 795; American Climatological and Clinical Association program, 796; Drug addiction, 835; Comparative statistics on physical examinations of pupils of the Boston public schools from December 1, 1915, to March 1, 1918, 915.
- Mobilising** the profession for war, 199.
- Mortality**, civil and military, 753; Mortality statistics for 1917, from the Health Department, Boston, 102.
- Municipal Civil Service Commission**, New York, 588.

## N

- National Tuberculosis Association**, 910.
- Naval Reserve Force**, Enrollment in the, 647; Naval Reserve needs male nurses and pharmacists, 722.
- Nephritis**, War, 229.
- Neurologists and psychiatrists** for the Medical Department, 517.
- Nursing Crisis**, The, 752.
- Nurses** in the United States Army, 96; More nurses needed for war service, 414.
- Nutrition**, Some relations of exercise to, George Van Ness Dearborn, M.D., 458.

## O

- Obituaries**. John George Blake, M.D., 446; Charles Greenleaf Carleton, M.D., 31; Horatio Franklin Copeland, M.D., 276; Harry Madison Cutts, M.D., 388; William Aloysius Dunn, M.D., 514; Royal Hatch, M.D., 100; Theodore Caldwell Janeway, M.D., 130; Professor Theodor Kocher, 29; William Henry Lathrop, M.D., 270; Franklin Paine Mall, M.D., 31; James Oliver, M.D., 378; Frank Wentworth Plum-

- mer, M.D., 31; Charles Dexter Sawin, M.D., 276; Samuel William Torrey, M.D., 100; Augustus Chapman Walker, M.D., 649; Irvine A. Watson, M.D., 660; Charles Herbert Williams, M.D., 886.
- Obstetrics**, Robert L. DeNormandie, M.D., 76.
- Occupational Diseases**, 207.
- Official Names of licensed drugs**, 912.
- Ophthalmology**, Report of progress in, Edmund W. Clap, M.D., 66.
- Orthopedic Footwear**, Revised ideas concerning foot defects, and, Herman W. Marshall, M.D., 428.
- Orthopedic Surgery in war**, 237.
- Owen and Dyer Bill**, 650.
- P**
- Palestine**, Medical matters in, 346.
- Paralysis Agitans** and myopathic dystrophy occurring in uncle and nephew, with evidence of internal glandular dyscrasia in the latter, Michael Osnato, M.D., 128.
- Pediatrics**, Progress in. A resume of the literature of infantile scurvy during the past five years, John Lovett Morse, A.M., M.D., 160.
- Philippine Health Service**, Annual report of the, for 1916, 403.
- Phthisis**, The x-rays in, George W. Holmes, M.D., 71.
- Physical Selection** in its relation to heart and lung conditions, M. J. Cronin, M.D., 187; The problem of physical selection applied to large numbers of applicants, Andrew F. Downing, M.D., 177.
- Pneumonia**, 271; Acute lobar pneumonia, F. C. Shattuck, M.D., and C. H. Lawrence, M.D., 245; Recent treatment of lobar pneumonia, Thomas F. Leen, M.D., 261; The serum treatment of pneumonia, 443.
- Pulmonary Tuberculosis**. Spontaneous pneumothorax complicating, Herbert F. Gammons, M.D., 637.
- Polio-myelitis**, The bacteriology of, 550.
- Prenatal Care and infant mortality**, 126.
- Principal Causes of Death**, 134.
- Public Health** value of universal physical examinations, 25; Prevention in public health, D. M. Lewis, M.D., 571; School of instruction on public health, 583; Massachusetts free school on public health, 616; Massachusetts school of public health, 647, 682; Convocation and four-day school of public health, 725; Four-day public health school, 827.
- Psychiatry**, Differential diagnosis in; A comparison of symptoms in various disease states, Lawson G. Lowrey, A.M., M.D., 703; Military psychiatry, 98; Some aspects of forensic psychiatry, J. W. Courtney, M.D., 313.
- Psychology**, The physician and, J. Danforth Taylor, M.D., 730.
- Psychopathic Constitution** resembling so-called moral insanity, and its interpretation, J. Victor Haberman, A.B., M.D., S.M.D. (Berlin), 194.
- R**
- R. A. M. C.**, With the, in France, M. A. Harrington, M.B., 631.
- Radium** in the treatment of carcinoma of the buccal cavity, Robert B. Greenough, M.D., 598.
- Reclamation of the disabled**, 545.
- Reconstruction and re-education of United States soldiers**, 171.
- Recruiting Notes**, Harold W. Dana, Captain, M.R.C., U.S.A., 255.
- Red Cross work with the United States Army**, 345; The first semiannual report of the War Council of the American Red Cross, 136.
- Red Streak**, The: A sign of disease, Edward A. Tracy, M.D., 332.
- Reduction in Pay** of officers in the field, 369.
- Re-educating German war cripples at Dusseldorf**, Douglas C. McMurtrie, 182.
- Rehabilitation of disabled soldiers and sailors**, 339.
- Renal and Ureteral stone**, Benjamin Tenney, M.D., F.A.C.S., 731.
- Respiration Apparatus**, A portable, for clinical use, Francis G. Benedict, 667.
- Respiratory Tract**, The anatomy and physiology of the, Frank F. D. Reckord, M.D., 660.
- Resolutions in memory of Dr. Blake**, 481; Resolutions on the death of Mr. Rueter, 170.
- Rest in cardiac insufficiencies**, 720.
- Retirement of General Keogh**, 310.
- Rheumatism**, Focal infection and, William E. Preble, M.D., 82.
- Röntgenology in the American Army**, Frank Wheatley, Jr., M.D., 727.
- S**
- School Inspection and sanitation in extra-cantonment zones**, 545.
- Secretaries for physicians**, 615.
- Septic Wounds**, The Carrel-Dakin method of treating; Its application to civil surgery, G. A. Moore, M.D., 109.
- Serum-Conserved dressing for industrial wounds**, Fred R. Williams, M.D., 452.
- Severance of the chorda tympani nerve**, Irving Sobotky, M.D., 224.
- Shell Shock among troops**, 133; Organic lesions in shell shock, 24; Shell shock and the American Army, 60.
- Shoulders**. Observations on disabled shoulders, with especial reference to sub-acromial bursitis, Hilbert F. Day, M.D., 389.
- Sickness Insurance or sickness prevention?** 784.
- Simulation of Disease**, The, 787.
- Standardization of the practice of medicine**, Myles Standish, M.D., S.D., 837.
- Society Reports**. Thirty-second annual meeting of the American Orthopedic Association, Washington, D.C., April 22-23, 1918, 781, 814, 874, 899; American Proctologic Society, Meeting June 4, 1917, 265; American Urological Association, Meeting of Nov. 15, 1917, 300; Biological Club of Philadelphia, Meeting Feb. 28, 1918, 610; Boston Surgical Society, Meeting Nov. 5, 1917, 262; College of Physicians of Philadelphia, Meeting of Dec. 6, 1917, 746; College of Physicians of Philadelphia, Meeting of Jan. 2, 1918, 505; Meeting of General Medical Board of Council of National Defense, March 11, 1918, 539; The New England Society of Dermatology and Syphilis, Meeting of Oct. 10, 1917, 224; New England Pediatric Society, The treatment of eczema in childhood, Charles J. White, M.D., 5; Meeting of Feb. 1, 1918, 902.
- Skin Tests**. The application of anaphylactic skin tests to general medicine, Samuel Ayres, Jr., 697.
- Spontaneous pneumothorax**, Philip H. Pierson, M.D., 385.
- Smallpox**. The control of a smallpox epidemic by vaccination, A. G. Gould, Ph.M., M.D., 395; The present smallpox situation, 581.
- Social Service**. The value of the physician and of the nurse in social service work in tuberculosis; the responsibility of each to the State and to the patient, John Hawes, 2d, M.D., 381.
- Stand behind the boys**, 646.
- Standardization of hospitals**, Charles A. Drew, M.D., 527; Standardization of school hygiene, 62.
- Soldiers**. The examination for tuberculosis in the U. S. Army, Edward O. Otis, M.D., 33.
- State Department of Health**, Annual report of the, 614.
- State Quotas of babies to be saved during Children's Year**, 306.

- Statistics**, The use of and value of, D. M. Lewis, M.D., 503.
- Stenosis**, Congenital pyloric, W. E. Ladd, M.D., F.A.C.S., 767.
- State Board of Health**, Suggestions for, regulations, 586.
- Streptococci**, Differentiation of, D. M. Lewis, M.D., 222.
- Structural Deformities** versus functional efficiencies as objects of treatments, Herman W. Marshall, M.D., 708.
- Surgery in the Aged**, 754.
- Surgical Sutures** as causes of wound infection, W. H. Watters, A.M., M.D., 530.
- Suspension-Traction**, Mobilization of the knee joint in suspension-traction treatment of fracture of the femoral shaft, G. A. Moore, M.D., 736.
- Swimming Pools**, Application of ozone to purification of, 415.
- Syphilis**, Primary syphilis of eyelid, with report of a case, Henry D. Lloyd, M.D., 609.

## T

- Tachycardia**, Paroxysmal, of ventricular origin, F. A. Willius, M.D., 40.
- Tax Returns**, Individual income, 64.
- Tetanus** in British home military hospitals, 342.
- Tonsil Operations**, The status of, 544.
- Transfusion**, Experiences in over two hundred cases, A. R. Kimpton, M.D., F.A.C.S., 351.
- Traumatic Shock**, W. T. Porter, M.D., 657.
- Treatment of eczema** in childhood, Charles J. White, M.D., 5.
- Trench Foot**, 367.
- Trench Sanitation**, Captain C. E. Burt, M.R.C., 567.
- Tuberculosis** and the war, 104; Army tuberculosis examinations, Horace Gray, M.D., 799; Artificial pneumothorax and pulmonary tuberculosis, Cleveland Floyd, M.D., 349; Climate in tuberculosis, H. F. Gammons, M.D., 364; The differential diagnosis of pulmonary tuberculosis, William H. Smith, M.D., 1; The examination of soldiers for tuberculosis in the U. S. Army, 33; Incipient and advanced tuberculosis, 442; Increase in tuberculosis, 134; Laboratory methods in tuberculosis, G. Benjamin White, Ph.D., 175; The modern treatment of tuberculosis, H. F. Gammons, M.D., 532; Pathological classifications of pulmonary tuberculosis, Herbert F. Gammons, M.D., 809; The physical examination in pulmonary tuberculosis, Joseph H. Pratt, M.D., 519; The place of the home, the dispensary, the sanatorium or hospital in the treatment of tuberculosis (Value of diet, rest, fresh air, etc.), Edward O. Otis, M.D., 417; The primary lesion of tuberculosis; its significance, diagnosis and treatment, William W. Howell, M.D., 152; Random remarks on tuberculosis, John B. Hawes, 2d, M.D., 589; Research problems in tuberculosis, Edward R. Baldwin, M.D., 105; Spontaneous pneumothorax complicating pulmonary tuberculosis, Herbert F. Gammons, M.D., 637; The value of the physician and of the nurse in social service work in tuberculosis; the responsibility of each to the state and to the patient, John B. Hawes, 2nd, M.D., 381; Tuberculosis and pregnancy, 881.
- Typhus Fever**, Immunization against, 508.

## U

- Unnecessary Operations**, George C. Wilkins, M.D., 347.
- Uterus**, Hemorrhage from the, in the non-pregnant woman, Frank A. Pemberton, M.D., 435; Ventral fixation of the uterus, causing dystocia. Ruptured uterus following version for transverse presentation. Hysterectomy and recovery. Report of a case, L. E. Phaneuf, M.D., 55.

## V

- Vaccine** in the treatment of whooping cough, 476.
- Vaginal Discharge** in children; study of 255 selected cases, with special reference to the question of the diagnostic and specific value of smear examinations, I. C. Rubin, M.D., F.A.C.S., 147.
- Vascular Hypertension**, The significance of, 475.
- Venereal Disease** as a menace to the nation, 341; Definition of infective stage of venereal disease, 444; The control of venereal diseases in Massachusetts, 508; The control of venereal diseases in Massachusetts, 514; The venereal disease problem in Massachusetts, Merrill E. Champion, M.D., C.P.H., 483; The Massachusetts venereal disease program, Eugene R. Kelley, M.D., 100; The Massachusetts venereal disease program, 172; The Massachusetts venereal disease program, Eugene R. Kelley, M.D., 208; The Massachusetts venereal disease program, Lyman Asa Jones, M.D., 236; The venereal disease program in Massachusetts, 231; The program of the State Department of Health against venereal disease, 95.
- Venereal Infection**, The fight against, 612.
- Venereal Problem**, The, —The Army viewpoint, Elmore M. McKee, 1st San., C.N.A., 467.
- Venereal Prophylactics**, The present status of, 679.
- Ventilation** after fumigation, 414.
- Ventral Fixation** of the uterus, causing dystocia. Ruptured uterus following version for transverse presentation. Hysterectomy and recovery. Report of a case, L. E. Phaneuf, M.D., 55.
- Vitamine Balancing**, 825.
- Vocational Rehabilitation** of disabled soldiers, 368; vocational rehabilitation of war cripples, 791.
- Vocational Training**, Hospital and, Richard P. Borden, 634.
- Volunteer Medical Service Corps**, 334.

## W

- War Committee** for the utilization of hospital facilities, 132.
- War Cripple**, The after-care of the, E. A. McCarthy, M.D., 37.
- War-Risk Insurance**, 167, 200, 271; The Government war-risk insurance, 126.
- Welfare Insurance** and the factory, J. F. Curran, M.D., 394.
- Workmen's Compensation**, The relation of the doctor to, Francis D. Donoghue, M.D., 693.
- Wounds** of the joints, L. Eloesser, M.D., 555.

## X

- X-Rays**, The in phthisis, George W. Holmes, M.D., 71.



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VOL. CLXXVIII  
No. 1

THURSDAY, JANUARY 3, 1918

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## CONTENTS

### ADDRESS

THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS.

*By William H. Smith, M.D., Boston.*

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### EDITORIALS

ORGANIC LESIONS IN SHELL SHOCK.

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EVERY DOCTOR IN THE MEDICAL RESERVE CORPS.

For complete table of contents, see first text page.

*Review by Dr. Henry K. Pancoast in the American Journal of the Medical Sciences*  
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### MEDICINE.

#### AURICULAR FIBRILLATION.

PRICE (*The Practitioner*, November, 1917), after discussing in detail the symptomatology and diagnosis of auricular fibrillation, takes up its treatment.

With the exception of a few cases of well marked myocardial degeneration and cases in which there is fever, digitalis is indicated. He begins with a drachm of the tincture for a day, or in urgent cases, even 1½ to 2 drachms. The dosage necessary in individual cases may exhibit a wide variation. It is important to discover the exact dose most beneficial to the individual patient. Having discovered this dose, in the majority of cases it is necessary for the patient to continue the drug for the remainder of his life. [J. B. H.]

#### LATHYRISM.

STOCKMAN (*Edinburgh Medical Journal*, November, 1917) discusses at length, in two articles, this interesting and historical disease. He describes the history of this disease in detail and discusses its action on various animals, with particular reference to his own experiments, and the active principle of this poison as an alkaloid which is obtained from a variety of pea which grows in the dry wheat lands and in the wet rice lands of India and certain other tropical regions. He then describes the occurrence of this disease in man, and illustrates his subject with photographs of native Hindoos who have been paralyzed. The disease commences with cramps in the calves of the legs, followed, after about two months' interval, by a somewhat sudden onset of paralysis. If he continues eating the peas, he loses control of the rectum and bladder sphincters. The knee-jerks are increased in all cases, the muscles in the back of the leg are rigid and, as a rule, are well nourished. He describes the gait in detail. He discusses the pathological diagnosis and treatment. Treatment, however, is generally said to be futile if the disease has fully developed. [J. B. H.]

#### THE TRUTH ABOUT INTRASPINAL INJECTIONS IN TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM.

FORDYCE (*Jour. A. M. A.*, Nov. 3, 1917), in a paper largely antagonistic to one read by Dr. B. Sachs at the 68th Annual Session of the American Medical Association, declares that if the statements contained in Dr. Sachs' article are accepted by the medical profession as final, an enormous amount of harm will result, in that numerous victims of syphilis of the nervous system will be deprived of their only chance to regain health and economic efficiency. He states that in tabes, certain types of cerebrospinal syphilis like meningitis, meningo-myelitis, meningo-encephalitis and in optic atrophy with positive findings in the fluid, intraspinal treatment succeeds in relieving or curing the conditions after failure of intravenous and other treatment. It is the only procedure that can be employed after intravenous treatment fails or when the patient develops an intolerance to arsenic. With proper technic and experience, it is less dangerous than intensive intravenous treatment. The criticism of the

(Continued on page vi.)

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(Continued from page 10.)

method is based largely on the results following imperfect technic and by its employment in cases without clear indications afforded by spinal fluid examination.  
 [E. H. R.]

### THE DIET OF PRISONERS OF WAR IN GERMANY.

TAYLOR (*Jour. A. M. A.*, Nov. 10, 1917) writes an extremely interesting article on this subject viewed from many angles. The article is not subject to abstract but is well worth reading by all medical men.  
 [E. H. R.]

### CARBON MONOXIDE POISONING.

MCCALLY (*Jour. A. M. A.*, Nov. 10, 1917) writes a very interesting article on this subject, in which he shows up the dangers, especially to families, in the escape of gas from furnaces or leaking illuminating gas stoves or pipes. The subject is well written and practical in its teachings.  
 [E. H. R.]

### THE MENACE OF MOUTH INFECTIONS.

OSBORNE (*Jour. A. M. A.*, Oct. 20, 1917) summarizes his observations and opinions by the emphatic statement that the following disorders may be definitely traced to mouth infections: Chronic invalidism, increased blood pressure, enlargement and either hyper- or hyposecretion of the thyroid gland, serious disturbances of the blood, heart, kidneys, stomach, and intestines, glycosuria and possibly true diabetes, serious distant focal infections, serious brain and nerve disturbances, ulcer of the stomach, pyelitis, appendicitis and chronic colitis and pneumonia. No treatment of these conditions will be of any avail until the mouth is made clean. Stock or autogenous vaccines are not very promising as to their therapeutic value, but should always be tried in obstinate cases. No promise of cure of a distant focus should be made but much benefit may be expected, and a determined effort should be made to eradicate all septic foci in the mouth.  
 [E. H. R.]

### MILITARY MEDICINE.

THE TREATMENT OF TRENCH FEET AND ALLIED CONDITIONS BY BIER'S METHOD OF PASSIVE HYPEREMIA.

TURNER (*The Lancet*, Oct. 27, 1917) discusses the treatment of trench feet and allied conditions by means of passive hyperemia. The treatment should be directed to (1) cleansing of the foot and the prevention of secondary infections, and (2) the treatment of the original inflammatory changes and also of any secondary infection which may have developed. He describes in detail, with illustrative cases, the methods of treating such conditions by means of a constricting bandage applied just above the knee. For the first day this is kept on for 18 hours. It is then removed and re-applied after an interval of six hours. It is then again applied and on the second and succeeding days it is left on for 22 hours in every 24.

The bandage should in all cases be applied just tightly enough to impede the venous return, but on no account must it obstruct the arterial supply. In many cases there will be no alteration in the appearance of the limb, but in some there will be noticed a slight increase in the swelling, or the leg below the bandage may feel slightly warmer as the result of the congestion. The treatment should be painless, and any complaint of pain—not slight discomfort—is an indication for the removal of the bandage. He has had one case in which this was necessary, and even here the bandage was subsequently re-applied without any further complaint of pain.  
 [J. B. H.]

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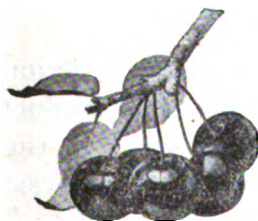
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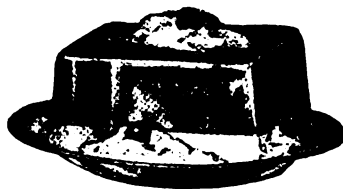
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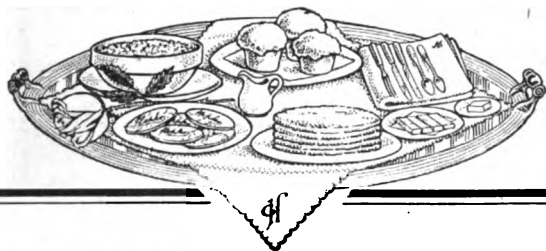
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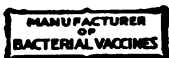
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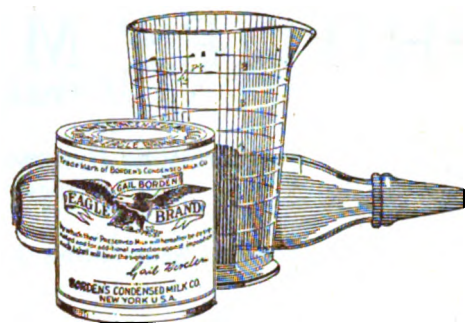
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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

January 3, 1918

ADDRESS	EDITORIALS
THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS. By William H. Smith, M.D., Boston. .... 1	ORGANIC LESIONS IN SHELL SHOCK. .... 24
NEW ENGLAND PEDIATRIC SOCIETY	PUBLIC HEALTH VALUE OF UNIVERSAL PHYSICAL EXAMINATIONS. 25
THE TREATMENT OF ECZEMA IN CHILDHOOD. By Charles J. White, M.D., Boston. .... 5	EVERY DOCTOR IN THE MEDICAL RESERVE CORPS. .... 26
ORIGINAL ARTICLES	MEDICAL NOTES. .... 27
LIPIDS IN 181 DIABETIC BLOODS. By Horace Gray, Boston. .... 16	OBITUARY
MEDICAL PROGRESS	PROFESSOR THEODOR KOCHER. .... 29
PROGRESS IN DERMATOLOGY. By John T. Bowen, M.D., Boston. 20	FRANK WENTWORTH PLUMMER, M.D. .... 31
BOOK REVIEW	CHARLES GREENLEAF CARLETON, M.D. .... 31
Clinical Laboratory Technic for Nurses. By Anna L. Gibson, R.N. .... 23	FRANKLIN PAINE MALL, M.D. .... 31
	MISCELLANY
	FREE PUBLIC LECTURES ON MEDICAL SUBJECTS. .... 32
	NOTICES, RECENT DEATHS, ETC. .... 32

### Address.

#### THE DIFFERENTIAL DIAGNOSIS OF PULMONARY TUBERCULOSIS.\*

BY WILLIAM H. SMITH, M.D., BOSTON,  
*Visiting Physician to the Massachusetts General Hospital.*

It is my belief that the recognition of pulmonary tuberculosis has reached a high level in this state. It is my belief that the number of cases wrongly diagnosed is infinitesimal in proportion to those in which the correct diagnosis is made. I think if those cases were excluded where carelessness permits well developed phthisis to be called grippe or malaria the real quota of mistaken diagnoses would be very small.

It is the occasional or unusual case that I wish to speak of. It is possible that I over-emphasize the importance of these, but experience and interest have brought me in contact with many pulmonary conditions, tuberculous and non-tuberculous, while several thousand sputum examinations have put me in touch with infections other than those due to the tubercle bacillus.

The subject for discussion—"The Differential Diagnosis of Pulmonary Tuberculosis"—naturally divides itself into two parts:

(1) The differential diagnosis of early pulmonary tuberculosis.

\* Read before the Framingham Medical Club and the Community Health Station, September 20, 1917.

(2) The differential diagnosis of late pulmonary tuberculosis.

Among the frequent manifestations of early pulmonary tuberculosis may be mentioned: (a) loss of weight; (b) hemoptysis; (c) fever; (d) debility; (e) cough. There are well recognized clinical conditions other than phthisis in which these symptoms, one or all, may appear. If mistakes are made they are usually through carelessness rather than lack of knowledge. I think there is some danger in emphasizing slight variations in apical percussion, or even in too literal interpretation of x-ray plates, without obtaining all the facts which a careful history or a more careful physical examination would furnish. I believe the expert on tuberculosis would be a better diagnostician if he saw more non-tuberculous cases.

(a) *Loss of weight* is a striking and early symptom of pulmonary tuberculosis. I would merely call attention to the fact that loss of weight greater than is usually seen in tuberculosis may be the first manifestation of the early thyroid case. Before goitre or exophthalmos appear, this loss of weight, with slight increase of the pulse rate, may suggest the possibility of phthisis. When tremor, which is present in these cases, is especially looked for, it usually will be found. Too frequently it is misinterpreted, as is the pulse rate, and considered of nervous origin, therefore phthisis is considered most likely. A most careful history of the incidence of tuberculosis in the family, a most

careful questioning for any previous tuberculous infection, and a careful physical examination for evidence of old foci of tuberculosis, pleuritis, glandular tuberculosis, or tuberculosis of the genito-urinary tract, will usually add evidence for or against phthisis. Louis' law should be remembered in this connection: "After the age of puberty a tuberculous lesion in any part of the body is almost invariably accompanied by pulmonary tuberculosis."

I saw, recently, two patients—one a doctor. Each had lost weight—one, forty-five pounds; the other fifty pounds, in a few months. The doctor was sure he had tuberculosis. In each the diagnosis of early thyroidism was made; within a few months both had developed goitre and exophthalmos. The diagnosis was suggested by the marked weight loss, the tendency to tachycardia, and the tremor. In any doubtful case the high basal metabolism present in goitre would make certain the diagnosis.

(b) *Hemoptysis*. I believe in the correctness of Cabot's dictum: "I do not deny that the causes of hemoptysis are numerous, but I assert that the causes of genuinely obscure hemoptysis in temperate climates may be reduced to one—pulmonary tuberculosis."

Too frequently patients are seen who give the history of having had hemoptysis several months before, who have been told by their physician that the blood did not come from the lungs. No adequate examination has been made of the case, no proper treatment for the underlying tuberculous condition has been instituted. When examined, advanced phthisis is only too frequently found. I believe widespread instructions upon this neglect of a very important symptom are necessary, judged by my personal experience with these neglected cases.

In the list of causes of hemoptysis in Cabot's "Differential Diagnosis" at the Massachusetts General Hospital, there were 1723 cases of phthisis, 1177 of mitral disease. I do not think this proportion fair, for limited numbers of phthisis cases are admitted to the wards of this hospital, while the cardiac cases are welcomed. The essential feature is that in mitral disease hemoptysis is common. I know of no heart condition so frequently overlooked as mitral stenosis, unless it is the early aortitis case. The reasons for this are, I believe, in the main, two: (1) Frequently the presystolic murmur or the diastolic murmur of mitral stenosis is absent at the time of examination; (2) it is heard only in an unusual position. Where a careful history has been taken, and frequent sore throats are recorded; rheumatic fever or chorea appears; where the tonsils have not been enucleated, and are still large, or merely clipped, the weight of evidence is in favor of cardiac mischief. It is not sufficient to disregard the soft systolic souffle at the apex, and explain it as hemic or due to the general condition of the patient.

Cardiac hypertrophy should be most carefully looked for. The apex of the heart should be palpated with the patient in the left lateral position. Murmurs should be listened for over a wide area, with the patient in various positions. If the hemoptysis is not too recent, slight exercise should be tried to see if the murmur will develop. Deflation of the lung (panting) will oftentimes produce change in the first sound, or develop a presystolic or diastolic murmur, clearly due to mitral stenosis. Check upon the probability can be made by a seven foot x-ray plate, or cardiogram tracing.

I have known bleeding from a gastric ulcer to be mistaken for hemoptysis. This could occur only where the patient was not seen at the time of the bleeding, or through a very imperfect history of the attack.

The bleeding associated with the expulsion of a fibrinous cast, and that with the expulsion of a foreign body (a piece of chicken bone) were both thought due to tuberculosis of the lung. In one large hemorrhagic cast three tubercle bacilli were found.

(c) *Fever*. There are some patients in whom slight registration of evening fever, with chilly sensations, have led to the suspicion of phthisis. It is important to consider in this type of case foci of concealed pus. X-rays of the sinuses, of the teeth, careful questioning about recent fillings of teeth or tender teeth, should be made. Examination of the urine should be made with a view to excluding an unrecognized pyelitis, possibly even associated with a silent calculus, only to be discovered by the x-ray. Occasionally syphilis of the lung with hemoptysis, or syphilis of some internal organ, with fever, may lead to the suggestion of phthisis. A Wassermann would probably clear the diagnosis at once. Occasionally Hodgkin's disease, with fever, without palpable gland enlargement may simulate phthisis. Usually the splenic enlargement, the enlarged bronchial glands, or mesenteric glands will suggest the possibility of the condition.

(d) *Debility*. Under the term debility is usually classified a candidate for phthisis. This group comprises many of the gastroptotic, low blood pressure cases, with gastric symptoms. In these thin, weak-muscled individuals, the physiological differences of the apices are exaggerated, especially when varying degrees of apical atelectasis are present. These patients require a great deal of study and much investigation before tuberculosis can be excluded. The majority of them are women; their usual age, twenty to thirty. They are usually much operated and much drugged, which adds to the confusion of the real underlying condition. Occasionally one has Addison's disease—the x-ray of the lungs will frequently show calcified glands or peri-bronchial thickening. No harm is done in treating them as if tuberculous, if over-feeding does not upset the ptosed stomach.

(e) *Cough.* Someone has said that every cough of two months' duration is due to tuberculosis. This is, of course, absurd. To determine the cause of the chronic cough may require time. To assume it at once due to phthisis discredits the examiner. The sputum examination separates often, at once, the tuberculous from the non-tuberculous case. It is surprising how difficult it is for early phthisis cases to furnish sputum. Bring them a cup, stand over them, and tell them to cough and spit into the cup. This simple method will raise at once the number of positive sputum findings. By this method I reported twenty-one positive sputum findings in one month's out-patient service. It is the atypical case, with the atypical history, in whose abundant sputum no tubercle bacilli have ever been found, that is so frequently puzzling. Physical examination usually helps to clear up the diagnosis in those cases where cough is the chief symptom. The age of the patient suggests other possible causes than phthisis. X-ray examination of the mediastinum or lungs, for glands, aneurysm, foreign body, high diaphragm, eliminates many possible factors, while Wassermann reactions and bacteriological sputum examinations assist in the diagnosis.

Occasionally, errors in diagnosis occur when pain in the chest suggests pleurisy; pleurisy, tuberculosis; and tuberculosis, phthisis. Two patients with the diagnosis of pleurisy were found to have mastodynia. One had syphilitic periostitis of a rib; one, referred pain from spinal osteo-arthritis. Metastatic pleural involvement from adeno-carcinoma was proven in one case by excision of a small gland just under the outer border of the pectoralis major muscle, and hypernephroma with lung metastasis, by x-ray of the kidney.

The acute broncho-pneumonia of influenzal origin, where the focus is situated at an apex, offers an interesting field for differentiation from early phthisis. The association of sinus infection is common in influenzal cases. X-rays of these are frequently of value. Tuberculosis of sinuses is rare. The finding of an extensive involvement of the naso-pharyngeal tract in a suspected case is against phthisis, but favors some other infection, like influenza. The history and further examination will make the diagnosis clear. In other words, to the careful man who employs modern methods of diagnosis, the differential diagnosis of early pulmonary tuberculosis offers little difficulty. I have often thought it would be of value to have a show-down of the evidence upon which some of the diagnoses of phthisis are made. I have encountered sufficient error in my experience to make me question if at times too much was not taken for granted in making such a simple diagnosis. It is carelessness, not ignorance, which renders differential diagnosis of early pulmonary tuberculosis difficult, if it is difficult. The essential

factor to remember is: the safety of the patient and the community is of much more importance than is the diagnosis. While this is being cared for by the provisional diagnosis of phthisis, further evidence may be accumulated for or against phthisis. It is when this evidence is not sought for, or the patient not treated as if phthisis was present, that the mistake is made.

When we come to consider the differential diagnosis of late pulmonary tuberculosis, the problem is more complicated. In my experience any acute inflammatory condition of the lung, if it is obscure, or unrecognized, may, if it goes on to pus formation, either by retention or compression, at times by extension, produce a condition simulating late phthisis. Pressure by aneurysm or new growth upon bronchi, with a resultant bronchorrhea, and fever, may suggest late phthisis. New growths, either by their pleural involvement, or when necrotic or secondarily infected, may mislead. Foreign body or embolic lung abscess is difficult of differentiation. Primary suppurative foci beneath the diaphragm, like the appendicular liver or perinephritic abscess, may, by their secondary pleura or lung involvement, suggest pulmonary tuberculosis.

How many specialists of tuberculosis, when called upon to diagnose an obscure lung condition following an appendix operation, question whether any focus of pus was present around the appendix at operation? With this fact known, the probability or improbability of a primary or secondary lung condition at once appears. Again, it is difficult to explain an obscure lung condition when in one interspace serous fluid is obtained, and 1 cm. lower, chocolate colored pus is drawn off, unless the history of operation for ureteral stone three months before is ascertained, and the fact that there was some pyelitis following operation. With these facts, perinephric abscess, sub-diaphragmatic abscess, secondary pleural irritation with lung compression, becomes apparent.

Fever, cough, loss of flesh, purulent sputum of months' duration led, with the physical signs to the diagnosis of tuberculosis, although no tubercle bacilli were found in the sputum. The history of the case favored septic embolism with pulmonary abscess and secondary lung involvement. Operation showed this to be correct. The history in brief was as follows:

A woman operated for fixation of uterus—infected wound. A few days later sudden left axillary pain waking her from sleep; a few days later pleuritic pain, fever, then cough and purulent sputum. Sputum negative for tubercle bacilli—large numbers of streptococci, extra and intracellular. Primary streptococcus lung involvement is rare. It is usually secondary to embolism or part of a general streptococcus process or infection from inhalation. The presence of hematoidin crystals in the sputum



was consistent with broken-down blood clot; consistent with embolic infarction.

In one lung, at autopsy, when a suppurating mediastinal lymphoma had produced pressure on the left lung, was found pleurisy with effusion, pressure atelectasis, bronchial compression with dilated bronchi, bronchorrhea, infarction, and pulmonary vein thrombosis. Imagine relying upon the changing daily physical signs in such a case! Yet there was cough, purulent sputum, fever, sweats; the patient was a young adult. The only positive aid in diagnosis was plate No. 2, x-ray, out of ten plates taken. This early plate was more suggestive of malignant lymphoma or mediastinal tumor. With the progress of the pathological lesions, due to compression, all other interpretations of the x-ray plates were unsatisfactory. Aneurysm was excluded by seven foot x-ray plate; absence of Wassermann reaction; absence of aortitis; the esophagus, when filled with barium and x-rayed, was found to be dislocated. Against tuberculosis surely!

I believe certain chronic influenzal bronchiectatic cases are wrongly diagnosed phthisis. As the condition is incurable the harm is not great, as the method of treatment applied for these supposed phthisis cases is in the main beneficial. The differential diagnosis is difficult, and time consuming. It can be done, however.

I think the differential diagnosis in elderly people between chronic bronchitis and emphysema and extensive phthisis is important. Under the emphysema the physical signs of phthisis are masked, and as they frequently show no fever and no increase of pulse rate, they are treated for bronchitis. Examination of the sputum for tubercle bacilli in this group of cases would yield some interesting results. I believe they are a source of danger because unrecognized.

The occasional foudroyant phthisis, simulating lobar pneumonia, can easily be recognized if the sputum is examined for tubercle bacilli. Fortunately this form of tuberculosis is rare, and the patients are bed-ridden from the start, and die before much chance for contact infection has occurred.

I have personally seen simulate late pulmonary tuberculosis, syphilis, influenza, bronchiectasis, multiple influenza broncho-pneumonia, foreign body bronchiectasis, foreign body inhalation pneumonia with abscess, after tonsillectomy or following teeth extraction under ether, encysted empyema, sub-diaphragmatic abscess, actinomycosis, malignant suppurating lymphoma, malignant disease of the lung, aneurysmal phthisis. In other words, any of the acute infections, given time enough, may through their chronicity simulate, identically, late tuberculosis. The history of the original onset of the condition, with a knowledge of pathology and bacteriology,

is as important in the differentiation of these cases as are the physical signs. In other words, I believe it difficult, outside of a big institution where every means of diagnosis can be applied, to differentiate some of these cases, and then only after much work has been done on the case. These cases in which no tubercle bacilli have been found with suggestive evidence against tuberculosis, should, in my opinion, have the benefit of investigation at one of the large hospitals. No consultant can diagnose the case seeing it but once. It is only when evidence has been accumulated that the diagnosis will appear. This takes time and labor.

My own practice in these chronic pulmonary conditions simulating phthisis is as follows: First, a most careful history, not only of the family but of the social conditions, of the working conditions, with the possibility of infection at home or at work; whether the patient has recently moved into another house, or has travelled much; the onset of the pulmonary condition; whether it started as a nasopharyngitis with fever, acutely, or followed an infection suggesting pneumococcus pneumonia; whether there had been any recent operations; if so, what they were, the anesthetic used, whether badly taken, the condition found at operation; the convalescence, if complicated. Next, the amount of sputum raised is carefully inquired into, its character, purulent, with or without hemoptysis, odor, ease with which it is raised. Cough; its character, dependent upon position, increased by change of position, productive or non-productive, periodic or constant, with or without heart symptoms. The sputum is then examined daily for tubercle bacilli, while the patient is under observation. If no tubercle bacilli are found, the type of prevailing organism present is noted—extra or intracellular, presence or absence of hematoidin crystals. In my experience in all chronic bronchiectatic cases the influenza bacilli will be found if careful search is made, frequently, of course, mixed with pneumococci and diphtheroids. Desquamated cells from the bronchi will usually be found. If hemoptysis occurs, frequently the sputum in the next few days will show large numbers of influenza bacilli. They may be isolated in pure culture on hemoglobin agar. Slides are made, and stained by Gram-eosine, and looked over with the low power for branching filamentous threads, Gram-staining. Elastic fibres are searched for. Presence or absence of large numbers of eosinophile cells is noted. Charcot-Leyden crystals are looked for in the sputum. Occasionally asthma simulates phthisis. Usually some clue as to the probable infection may be obtained by this searching sputum examination.

Four-hour charts are started on all patients at admission. X-rays of the chest are taken;

later, if necessary, stereoscopic. In one case an aluminum tracheotomy tube, blocking the left bronchus, with bronchorrhea, fever, chills, sweating, extensive left lung signs, failed to show in x-ray plates especially taken to exclude foreign body. Wassermann reactions are the rule on all cases in the ward.

If effusion is present, tapping, with bacteriological and cultural examination, is done, with cell count. Smears of all fluids are stained by Gram and eosine. Frequently dead pneumococci will show in the smear when they do not grow out in the culture.

If there is any suggestion of new growth, either in the history or physical examination, the primary tumor is sought for. X-rays of stomach and intestine, bismuth enemata, uterine examinations, x-rays of kidney for hypernephroma, commonly metastasizing in the lung or pleura, even x-rays of the distended kidney pelvis where the suggestion is warranted after a genito-urinary consultation. Any accessible gland along the outer border of the pectoralis major muscle, or if accessible in the axilla, or even above the clavicle, is excised and sent to the pathologist. Blood examinations with differentiation are done as a routine to exclude hidden suppurations or leukemia. In rare cases, after consultation with an expert in the use of tuberculin, tuberculin tests may be made. Daily amounts of sputum are measured in the ward; the larger the amount the more apt is bronchiectasis or undrained abscess or empyema, encysted, to be found. Clubbing of the fingers and toes is noted. Aneurysm is excluded by the absence of aortitis. I have had no bronchoscopic examinations made.

In doubtful cases exploratory thoracotomy is advised, after carefully going over the case with the special surgeon; each detail in the presumptive diagnosis being given; whether the focus is below the diaphragm or above; whether secondary to embolism or pressure; the evidence against tuberculosis is presented with the evidence for the probable condition; the pre-operative risk of the patient is carefully gone into by the medical service.

A surgeon has been following the past two weeks a case. The examination of the pleural fluid has been done on five separate fluids, daily tubercle examinations of the sputum have been made, repeated x-ray plates have been taken—kidney plates as well as lung plates. Whether a small sub-diaphragmatic abscess has secondarily infected the pleura, or a small lung focus, possibly tubercular, is the cause of the suggestive purulent pleuritis, has not been determined to date.

#### CONCLUSIONS.

I do not think the differential diagnosis in early phthisis offers much difficulty if care is used. If there is any doubt, the patient should be treated as if tuberculous; the possibility of

thyroidism, of mitral disease, concealed pus, ptotic conditions, should be thought of in the doubtful case. A careful history or further examinations will clear up the diagnosis. In the meanwhile the patient is being treated as if phthisis was present.

In the late cases I do not believe, when the doubt of phthisis has been raised, that it is possible, without being prepared to follow out the methods of diagnosis suggested, to differentiate between late phthisis and other lung conditions. I believe these patients should be referred to one of the large hospitals, where, at small expense, the necessary examinations can be made. Without them I, personally, do not know how to differentiate these atypical lung conditions simulating late tuberculosis.

### Society Report.

#### NEW ENGLAND PEDIATRIC SOCIETY.

MEETING of Society held at the Boston Medical Library on April 27, 1917, at 8.15 p.m.

Dr. Maynard Ladd of Boston in chair.

The following papers were read:

1. "Treatment of Eczema," Charles J. White, M. D., Boston.

2. "Mechanisms of Defense and Serum Treatment of Poliomyelitis," Harold L. Amoss, M.D., New York.

Discussion opened by Dr. Francis W. Peabody, Boston, Dr. Edwin H. Place, Boston.

Light refreshments were served after the meeting.

#### THE TREATMENT OF ECZEMA IN CHILDHOOD.

BY CHARLES J. WHITE, M.D., BOSTON,

*Edward Wigglesworth Professor of Dermatology in Harvard University.*

THE eczema of childhood has always been one of the dermatologist's difficult problems, but, within a few years, since the introduction of fecal examinations and cutaneous food tests, the pediatricists have been assuming more and more of this etiologic and therapeutic burden; to such an extent, in fact, that some of them have appeared in print with the startling assertion that henceforth eczema should be considered the pediatricists' province, validating this claim on the grounds that the treatment of eczema is purely a question of feeding. We dermatologists who have dealt with this problem for so many years do not hesitate to dispute this claim vigorously; first, because we know from our experience in public and private practice that many pediatricists are not yet capable of making a proper diagnosis of the complex disease, eczema; and secondly, because we are not yet convinced that all examples of the conditions now classified under the heading of eczema have

been proved to be dependent on food poisoning, so to speak.

This is seemingly, perhaps, a peculiarly ungrateful introduction to this paper, the investigations for which have been based on the pioneer work done by one of your members, Dr. Talbot, who, in 1913, in conjunction with Dr. Towle, published an article on the stools of eczematous babies. Nevertheless, I must stick to my guns for the reasons aforesaid.

Following the lead thus described, I have devoted practically all of my medical leisure during the last three years to the etiological question of eczema from the standpoint of food. Cutaneous food tests and stool examinations have been made, and my records of children and adults extend now to above three hundred. Let me hasten at once to state that the cutaneous tests have been made largely by my house officers, and the fecal examinations by Dr. F. B. Talbot, Dr. L. W. Hill, and by my house officers as well. To all of these valuable coöperators I now extend my sincere thanks.

The results which follow later on in this communication relate to chronic eczema—that mysterious cutaneous eruption the cause of which has thus far escaped detection, and the rapid cure of which still awaits further solution. You will see, therefore, that I do not include in this category the cases of acute eczematous dermatitis (dermatitis venenata), the origin of which we know, or the examples of more or less long-continued eczematous dermatitis which yield promptly to expert external treatment. The type of eczema to which these experiments relate is represented by those cases which may begin within a few days or weeks of birth without ascertainable reason and persist, despite the best of care, for one or more years and in some instances off and on until the death of the individual in old age.

Before we take up this more difficult subject, let me dismiss the easy part of this problem of eczema, that is, the treatment of the amenable cases.

#### ECZEMA AMENABLE TO EXTERNAL TREATMENT.

*General Directions.* Let us bear in mind always that eczema is an inflammation, and like all inflammations, demands rest and protection from harm; and in this specific instance protection from harm means guarding the skin from all physical and chemical irritants, including water. If we are dealing with an individual who must continue his daily task and who, therefore, must of necessity wash, let us appreciate that this necessarily frequent evil can be mitigated somewhat by adding cornstarch or bran to the water, by regulating the heat of the water to that of the external body temperature, by using a superfatted-coldcream soap, and by drying the skin as one would blot ink with blotting paper. Let us warn our patient to protect his affected hands with frequently

sterilized gloves. Let him use cotton gloves for light dry work, dogskin gloves for heavy dry work, and loose-fitting rubber gloves, well and constantly powdered, for wet work.

Of course these directions are intended for the individual who must continue his work, but it goes without saying that such an individual will be cured comparatively slowly and that he certainly increases the risk of becoming what I have termed an unamenable case.

*Intertrigo.* The erythematous condition which occurs on contiguous surfaces as a result of heat plus stationary urine, feces, or perspiration is very easily managed by sufficient and gentle bathing with a mild soap and lukewarm water; by thoroughly drying, by patting rather than by wiping, with a sterile absorbent material; by dusting into the folds of the skin a well-made, borated talcum powder; by changing clothes the moment they are soiled; and, finally, by forbidding too many and too warm clothes. The overdressing of young children is happily passing in this modern era of underdressing in adults, except among the poorer classes, where we still see babies swathed in yards and yards of unnecessary and dirty clothes.

*Miliaria.* Prickly heat, although perhaps not strictly speaking an eczema, should be included here. Once more we are dealing with too great heat, either artificial or natural, and it behooves us to correct the former cause. Cut down the amount of clothing to the limit; favor rest during the heat of the day; limit the amount of heavy foods ingested; request frequent baths in cool water; and have ready at hand the well-known milky wash (acid carbol. 2, zinc. oxid. 16, aq. calcis 250); sop this on the moment the skin itches or prickles, and as soon as it dries dust on plenty of borated talcum powder.

*Balanitis.* This peculiar eczematous infection of the glans penis looks and is terrifying to the young boy, but it is, happily, a condition curiously amenable to the right treatment. If the physician is cognizant of black wash (hydrarg. chlorid. mitis 2, aq. calcis 250) and uses it in the correct way, balanitis melts away like magic. The cure of this disease can be hastened by the additional use of boric acid ointment, worn when the wash is not being applied. If balanitis becomes a recurrent trouble the child should be circumcised.

It is proper to pause here to interpolate a few remarks based upon a rather long experience with patients who have been treated by medical men who have not made a specialty of dermatology. The seemingly inevitable tendency of this large proportion of the profession is to use too strong applications, to employ advertised remedies, or to prescribe the proper remedies and fail to impress on the patient their proper use. This last shortcoming is especially evident in the treatment of moist dermatoses where we dermatologists are apt to suggest evaporating lotions and dusting powders and perhaps no dressings;



while the general practitioner may prescribe ointments and bandages; and the surgically inclined may wrap the part up in yards of dressings and in some cases even apply oiled silk.

Let me repeat that the most serviceable proportions in ingredients in the very useful "white" wash and "black" wash are those which have been detailed above, and that the white wash should be reasonably fresh and sopped on at frequent intervals (in vesicular or bullous conditions as often as once an hour) and that the black wash should be laid on the affected part by means of a thin piece of linen or cotton for fifteen minutes twice or three times a day. These are the best methods for the use of these two valuable and serviceable lotions, and yet I have frequently seen them both used as poultices and have had the attendant physician describe their effect as useless. A large part of the success of dermatological practice depends upon the knowledge of detail of the physician and upon the implicit coöperation of the patient.

*Paronychia.* Here again is an eczema-like infection which may well be mentioned in this connection. The treatment of this at times painful condition is really that of balanitis and it is surprising to note the ready response of this apparently deep infection to the proper application of black wash plus boric acid ointment (acid. boracic. 2-4, adipis benzoat. 30) under a thin "cot," with or without the addition of salicylic acid, plus the absolute cessation of all manual work with the affected finger, and the forbidding of contact with all substances save those described.

*Eczema Impetiginosum.* Once more we are dealing with a condition which in a true sense may not be eczema at all but a condition which cannot objectively be differentiated from that elusive quantity known as eczema. The instinct of the trained man in these cases is to look at once for the presence of pediculi or their ova. If any of these foreign bodies are detected, the simplest remedy in boys or in young girls is to cut the hair short, thus getting rid at one fell swoop of the whole etiological question. In older girls and in all children in the winter months this radical procedure is not practicable and we must resort to the tedious application of crude petroleum (because this substance is efficient, cheap and easily obtained) to kill the living organisms, and to the still more vexatious process of ungluing the nits from their firm attachments to the hair shafts. This is a very troublesome question, for the keratin of the egg shells and of the human hair is very closely allied chemically, and it follows that what destroys the one will probably destroy the other. We must, therefore, limit our efforts to loosening the ova from their seats. Thus far chemists have not produced, or at least dermatologists have not discovered, the ideal solvent. At present we believe that xylene—a distillate

of wood—is our best agent; but we must remember that this substance is somewhat irritating to the young skin, and we must actively bear in mind that it is highly inflammable. The application of xylene should, in consequence, be left to trained hands.

With the rapid or the gradual riddance of pediculosis from the hair, we begin simultaneously our attack on the cutaneous eruption. Here our methods are well defined. We must remember that staphylococci, or perhaps streptococci are at work, and we must advocate frequent gentle shampoos with soap and water; but here, also, precautions must be taken. We are dealing with a superficial infection and we must take care to limit this infection. Let us, therefore, recommend sterile gauze as a sponge and as a towel, and let us make use of a mild, powdered or liquid soap, rather than the family cake. With the areas properly washed and dried, we then apply boracic ointment (2 to 30) and within a few days we expect to see the process dry up and begin to disappear.

*Eczema Madidans.* This form of eczema represents the type that we encounter most frequently in childhood. It may begin within a few days or weeks of birth, and, if untreated or handled improperly, may lead to the variety of the disease we all dread—the type which I have earlier this evening designated "unamenable." Up to within a few years even skilled dermatologists feared this type of infantile eczema, for we knew that most of these cases would defy our best and most painstaking treatment. We still recall the first two winters and the intervening summer of these children's lives, the impossibility of their bathing, the scratching and tearing of their skin, the writhing of their heads and bodies, their necessary confinement under masks and safety-pins, the boxing gloves for their hands, the stiff cardboard for their elbows, their necessary confinement to the house in the cold months of the year, their inability to dig in the summer—all in all a hideous nightmare to us all, patients, parents and doctors alike.

Now, fortunately, this prolonged and distressing experience is for the most part banished from our lives, for we have discovered a remedy which has revolutionized this part of our practice, and the large majority of these children are cured, and cured within a comparatively few weeks. This remedy lies in the proper use of crude coal tar, the by-product of the manufacture of coal gas. This is an inky black, thick, barely fluid mass which smells somewhat of gas. It is essentially a crude substance, varying, of course, with the type of coal from which it is derived. I have used it in great quantities in public and private practice, and in properly selected cases its effect is really wonderful. It is, indeed, no exaggeration to state that its use has entirely altered the treatment of moist eczemas in its various types. Strangely enough, there is

practically no reverse to this brilliant picture—in other words, save for an epidemic of three cases, I have never known this drug to do any harm in my hands.

Brocq of Paris was the probable discoverer of the therapeutic value of this substance, and he advocated its use in pure strength in the weeping, localized eczemas of adult life. We have extended its uses by modifying its manner of application, until now we prescribe it wherever we can possibly find any excuse—that is, in any eczema which shows any sign of moisture. Experimentation has proved that in its pure state it is advantageously used only on the raw surfaces of the adult disease; in childhood we prescribe it in the strength of one-half drachm to the ounce of zinc paste (crude coal tar 2, zinc. oxid. 2, amyl. maidis 16, vaseline 16). This still black mass is smeared thickly on the face or scalp or hands night and morning by means of a wooden throat stick, and no dressing whatever is placed over it. Every day the old paste is removed gently with the aid of soft gauze and oil of sweet almonds, and the fresh applications are made until the disease is cured or until we find we are dealing with an unamenable example of the disease.

There are three minor drawbacks to this otherwise almost perfect medicament: 1. It is very dirty and of course stains badly. Linen or cotton should never be washed with soap or water without first rubbing the soiled fabric well with lard—otherwise an indelible battle-ship-gray results. 2. Where there is hair, the crude coal tar is likely to produce follicular pustules. Therefore—and this rule is particularly pertinent when vernix caseosa is present—cut all hairs as closely as possible and as frequently as necessary before applying the drug. If pustules develop, cease all applications in their immediate vicinity until these intercurrent lesions have disappeared. 3. Crude coal tar will not tolerate, that is, in my hands, the synchronous use of any other drug. In other words, don't try to use another and more esthetic application by day; use nothing at all, or, best of all, continue the application of the crude coal tar day and night until the disease is wholly well, or until you find that it cannot get well by this means. You would treat a broken leg or a severe systemic disease throughout the twenty-four hours, surely, and, therefore, try to convince your frequently recalcitrant patient that eczema requires all the care it can get. You are handicapping severely your patient and yourself if you don't exhibit a little backbone in such circumstances.

These three are the only difficulties in the use of this otherwise splendid drug—a drug which has meant much to my patients and to my peace of mind and satisfaction in the last few years.

*Eczema Papulosum.* This is an infrequent

type of the disease, and especially uncommon in children. If confronted with this variety of the process, don't use ointments or pastes. Prescribe washes, and, if successful, be careful not to stop half way in the course and add or substitute any greasy substances. A very good wash for the acute cases is as follows: amyl. maidis 25, talci 25, glycerin. 20, aq. saturnin. 100, aq. destillat. 100; and for the chronic examples: liq. carbonis detergent. 20-30, aq. destillat. 250.

*Eczema Squamosum.* For the dry, finely scaling type of the disease, mild ointments do very well. Remember the rôle that cold, dry weather or hot, dry weather plays in this form of the trouble. Remember, also, that eating corn off the cob is a not infrequent cause of dry perioral eczema. A very useful ointment is the following: acid. salicyl. .65, bismuth. subnitrat. 2-4, ung. aq. rosae 30.

These, then, are usually successful remedies to apply when we are confronted with amenable eczema in one or more of its many various phases. If we are to succeed in our efforts we shall know it within a week or two. If we find that we are to fail, then we must make up our minds that we must call to our aid other methods than the simple applications of external remedies.

#### ECZEMA NOT AMENABLE TO EXTERNAL TREATMENT.

So far as I can judge there are no outward differences between individual examples of eczema amenable to expert external care and those which are to prove unamenable. Even in cases which have lasted for years the proper applications may prove curative in a comparatively short time; but of course the longer any dermatosis has continued the poorer the prognosis—that is usually a safe guess.

During the last few years it has been my custom, as stated above, when confronted with an unamenable example of eczema of any type, to have food tests and stool examinations made, and in the long lists which follow, the inquisitive and faithful reader will note the results of these inquiries.

As all of you may not be familiar with this work, allow me to mention briefly the technic adopted in the skin tests. In a certain number of patients the skin was delicately broken by the rotation of a dental burr, while in others an exceedingly superficial incision was made with a clean, sharp scalpel. The latter method was finally adopted because it produced less artificial disturbance in the controls of the factitiously urticarial subjects. The flexor surface of the arms of the affected subject was cleaned, two parallel rows of four or more incisions were made, and into the incisions of one row were gently rubbed the particles of food to be tested, while the others were left undisturbed and served as controls. The arm was observed at intervals up to a half hour, and a

slightly positive reaction was considered to consist of reddening and infiltration; a positive reaction of definite papulation and a double positive was recorded when these characteristics were still further accentuated.

During my first and second years only raw food types were inoculated. Milk freed from its fat content was chosen to represent the most important food of childhood, salt-free butter to represent fats, egg albumin to represent proteids, and lactose or oatmeal water to represent the sugars and starches. As experience grew, it was learned that an individual might be susceptible to only one or to more of a certain group of our food substances, and so the tests were extended to many individual representative foods. For this work one of two methods was adopted—either the so-called proteids of foods, as dispensed by a certain chemical company, were used, or the articles of food were prepared according to the formulae adopted by Dr. J. A. Turnbull.

By one of these latter methods we have tested many individuals with the following substances: beans, wheat, barley, rice, oats, rye, lentil, corn, buckwheat, pea, turnip, cabbage, carrot, tomato, squash, potato, parsnip, grapefruit, strawberry, egg white, lactalbumen, beef, lamb, pork, and chicken.

The professionally prepared "proteins" have been given a thorough trial, and in a later series were compared in the same individual with the raw product method, but the conviction was finally borne in upon me that they are not reliable. My own trials of foodstuffs, prepared according to Dr. Turnbull's methods, are not sufficiently numerous to be of any value, but it is evident that he and Dr. Goodale and other investigators have faith in them, at least in urticaria and asthma and hay fever.

For those who are interested in this modern theory of eczema I have introduced the method of food preparation for the cutaneous tests adopted by Dr. J. A. Turnbull and the procedures in stool examination followed by Dr. L. W. Hill.

#### PREPARATION OF FOODS AS TESTING MATERIAL.

1. Render food to a fine mass, add water and allow to stand in a cool place for two days.
2. Filter and to the watery extract add four volumes of 95% absolute alcohol. The alcohol throws down a precipitate.
3. Filter and wash the precipitate: (1) with normal saline solution, (2) with 95% alcohol twice, (3) with ether twice, and (4) allow to dry in a powdered form.

This is the method adopted by Dr. J. A. Turnbull, who is devoting much time to the subject of food tests in urticaria, asthma and hay fever.

#### FOOD TESTS.

CASE 1. Male, aet. 4½ years. Disease present since birth. Treated for four years. Eruption con-

sists of oozing redness of face and scalp, at times impetiginous. Von Pirquet negative. Food tests negative.

CASE 2. Male, aet. 8 weeks. Child breast fed. Has an occasional green stool. Scalp shows a large cradle cap, and for five weeks there has been a redness and scaling of forehead and side of scalp. Tests: albumin ++, butter +.

CASE 3. Male, aet. 7 months. White cell count 20,000; eosinophiles 1%. Stools are yellow and sour and show many large, coarse, white curds. Infant breast fed for two months and afterwards according to milk formulae. Disease present for six months. The scalp, forehead and cheeks are moist, red and crusting. With the use of crude coal tar and suitable changes in the milk formulae, disease was cured in twenty-five days. Tests: milk ±, albumin +++.

CASE 4. Female, aet. 8 years. Leucocytes 6,000-11,000, hemoglobin 75-90%, eosinophiles 2-3%. Stool shows some fat but not in excess. Disease present for two years. Eruption was finely papular for weeks and later became erythematous and impetiginous, affecting scalp, face, hands, arms, neck and upper thorax, and accompanied by marked adenitis. Rebellious to many forms of treatment, including the use of x-rays and auto-serum. Aggravated by a non-nitrogenous diet, and somewhat benefited by a low fat régime. Tests: milk +, albumin +.

CASE 5. Female, aet. 16 months. Whole lower face a mass of moist crusts. Tests: milk ±, butter ±, lactose +.

CASE 6. Male, aet. 11 months. Child breast fed. Disease evident for ten months. Forehead, cheeks, chin and wrists red and furfuraceous. Tests: milk ±, albumin +.

CASE 7. Male, aet. 3 years. The disease has been present on and off for two years and now the cheeks are pink and scaling and the trunk and back of the thighs show grouped crusting papules. Tests: milk+, albumin ±.

CASE 8. Female, aet. 6 years. Disease has been present ever since birth, but child has not been treated. The hair is like tow and the skin of the face and of the bend of the elbows is infiltrated and excoriated. Tests: butter ±.

CASE 9. Male, aet. 4 months. There are scattered macules on the trunk, and the skin of the palms, flexor surface of the arms, lower abdomen, penis, scrotum and thighs is bright red and moist. Tests: milk ±.

CASE 10. Female, aet. 6 months. At age of one month the whole body was affected. Child entirely breast fed. Now the skin behind the ears and in the folds of the neck is red and moist. Tests: milk ±, albumin ±, butter ±, control of albumin ±.

CASE 11. Male, aet. 4 months. The baby is breast fed and has bottled milk as well. For two months the eruption has been present, and consists of an extensive cradle cap and redness, scaling, and, at times, moisture behind the ears and on the left cheek. Tests: milk +, albumin ±.

CASE 12. Male, aet. 2 years. Since early life the skin has been "broken out." The child was nursed only ten days. Eruption comes and goes; better in summer. There is much itching and the face, hands and arms show erythema, excoriations and bloody crusts. Tests: milk  $\pm$ , butter  $\pm$ .

CASE 13. Female, aet. 3½ months. Breast fed and constipated. The face, forehead and scalp are red and vesicular; the scalp is greasy as well. Tests: milk ++++, albumin ++, butter +++.

CASE 14. Male, aet. 14 years. Duration three years, and the disease is always worse in cold weather. The face and arms are thickened, lichenified, excoriated and crusted, and there are excoriations over the rest of the body. Tests negative.

CASE 15. Female, aet. 14 years. The disease has lasted for one year, and now consists of a leathery, yellow-red, excoriated condition of the face and hands. Tests: milk  $\pm$ , albumin  $\pm$ , butter  $\pm$ .

CASE 16. Female, aet. 14 years. The disease appeared at the age of three months and has persisted intermittently ever since. Today the flexures of the elbows and knees, the forehead and the neck are pink, infiltrated and dry. Tests: milk +, albumin ++, butter  $\pm$ .

CASE 17. Female, aet. 11 years. On the left arm there are three pink-red eczematous patches three-quarters of an inch in diameter, and the patient states that she has shown the same condition for the last few winters. Tests: milk +, albumin  $\pm$ , control of albumin  $\pm$ .

CASE 18. Female, aet. 10 years. Leucocyte count, 10,000, hemoglobin 75%. Eczema has existed for three years, principally on the face and genitalia. The child is poorly nourished. While under observation in the skin ward, on several occasions last autumn, the disease manifested itself primarily on the scalp, in the eyebrows and on the neck in the form of redness and adherent crusting. There was discharge from the ears and nose, eventuating in an attack of erysipelas. This patient was benefited more by autogenous vaccines than by any other form of treatment. Tests: milk +, butter +, lactose +. The child would be discharged free from eruption, but would return in a few weeks as bad as ever.

CASE 19. Female, aet. 2 years. Leucocyte count 10,000, hemoglobin 75%. The child was breast fed for four months and then given cow's milk and eggs. At the age of two months a lesion appeared on one heel and eczema developed and has persisted ever since. The scalp is crusting and caked; the face and ears are red, oozing and bleeding; the eyelids are stiff; the back is red and stiff; the chest and abdomen are rough and papular and excoriated; the thighs and groins are red and infiltrated; the popliteal spaces are reddened. The feces showed a moderate excess of fatty acids and soaps. The child was put on a fat-free diet and treated externally, and in less than three weeks all areas, save the scalp, were healed. This region required six additional weeks to be cured. Tests: egg albumin +.

CASE 20. Male, aet. 3 years. Eczema for one year, and there are now oozing lesions on scalp, ab-

domen and genitals, with some papules on trunk. The feces show an excess of fat. White count has varied from 10,000 to 37,000. Hemoglobin 75-80%. The eyes are prominent, the tonsils are enlarged, and there is a general adenitis. Percussion and radiograph reveal an enlarged thymus gland. Two x-ray exposures of 30 milliampere minutes, 70,000 volts, with aluminum filter, produced a decided subsidence of the thymus and of the leucocytes. Tests: albumin +, fat +, lactose +.

CASE 21. Male child. Disease off and on for four years. The stool examination was negative. Tests: milk +. The patient was deprived of milk in all its food, and in one month the eczema was apparently cured.

CASE 22. L. W., aet. 14, schoolboy. Duration of disease, three years. Thickening, lichenification and excoriation of body generally. Food tests negative Jan. 21, 1915, and again Nov. 2, 1915.

CASE 23. W. F., aet. 13, schoolboy. Treated off and on for eleven years. Present eruption consists of small pinhead papules with punctate excoriations. Chest, axillae, abdomen and groins affected. Food tests negative.

CASE 24. J. B., aet. 6, schoolboy. Disease six years in duration. The pubes and adjacent thighs are red, papular and thickened; the flexures of forearms are red, fissured and oozing. Food tests negative.

CASE 25. B. E. G., aet. 7, schoolgirl. Both ears are red and oozing. Food tests negative.

CASE 26. R. S., aet. 2 months—a boy with nummular areas of erythema, infiltration and scales over the head, trunk and limbs of four months' duration. Food tests negative.

CASE 27. B. S., aet. 1 year; a breast-fed and very fat girl who has had the disease practically since birth. The Children's Department suggests that some internal secretion is upset. The cheeks and chin show fine, pink papules and the groins are red and moist. Food tests negative.

CASE 28. W. H., aet. 15 months. The disease began at the age of six weeks and has persisted. There has been much oozing and crusting on scalp, face and arms. Food tests negative.

CASE 29. G. E., aet. 7 months. The eruption began six months previously, and at the time of the tests there were papules on the buttocks. Food tests negative.

CASE 30. H. J. W., aet. 4 months. There are patches of infiltration, exudation and crusting on the cheeks and extensor surfaces of the arms of several weeks' duration. Food tests negative.

CASE 31. J. G., aet. 6 months, breast-fed girl. Duration of disease, three months. The face is erythematous, oozing, crusting and fissured. Food tests negative.

CASE 32. B. C., aet. 15, schoolgirl. Disease has been intermittently present for ten years. Present

attack is three months old and consists of redness and fine vesiculation with some crusting on the palmar surfaces of the right finger. Food tests negative.

CASE 33. G. H., aet. 1 year. Disease present almost since birth. Now behind and under the ear is an erythematous, moist, sharply defined area. Food tests negative.

CASE 34. S. F., aet. 3 months. Duration, one month. Generalized erythema and mild exudation. The baby is breast fed. Food tests negative.

CASE 35. S. R., aet. 13 weeks. Breast fed. For two weeks the cheeks and forehead have shown minute papulation and furfuration. Food tests negative.

CASE 36. D. B., aet. 4 months. Disease present for three months, and at present shows a mildly exudative condition of the face and neck. Food tests negative.

CASE 37. T. G., aet. 7 months. Dirty yellow crusts on both cheeks for the last two weeks. Food tests negative.

CASE 38. J. J. W., schoolboy, aet. 9. Child painted himself red and the eruption appeared and has persisted. Whole face and arms are covered with an almost coalescent, excoriated, papular eruption. Food tests negative.

CASE 39. J. R., aet. 1 year. Breast fed. Face and ears have been red, excoriated and exuding for one month. Second attack. Food tests negative.

CASE 40. M. G., aet. 11, schoolgirl. Eczema "for years." The skin at present is generally red, thickened and fissured. Face erythematous and scaling. Food tests negative.

CASE 41. J. T., aet. 20 months. Duration three months. There are crusts and fissures on the face and scalp. Food tests negative.

CASE 42. H. S., aet. 3 months. Six months' duration. The forehead and cheeks are oozing and crusting. Food tests negative.

CASE 43. E. B., aet. 6 weeks. Breast fed and vomits after feedings. For two weeks there have been miliary papules over both cheeks and on scalp. Food tests negative.

CASE 44. M. G., aet. 9 weeks. Breast fed. The cheeks are finely papular. Food tests positive.

CASE 45. J. F. K., aet. 4. The eruption appeared one week after birth and now appears as fine, bright red papules on the scalp, neck, chest and buttocks. Food tests positive.

CASE 46. E. M., aet. 6 months. For four months the cheeks and scalp have shown deep excoriations and bloody crusts. Two months later the scalp was well and the cheeks dry, pink and scaling. Food tests positive.

CASE 47. F. T., aet. 6. Disease has persisted six months, and at present the skin of eyelids, ears and

scalp is infiltrated, crusting and excoriated. Food tests positive.

CASE 48. I. R., aet. 3½ months. The first child had eczema also. The patient is breast fed, and for two months the cheeks, forehead and anterior part of the scalp have shown scattered, coalescent papules, some of which are excoriated and oozing. Food tests positive.

CASE 49. T. K., aet. 7, schoolboy. Duration, three weeks. A prurigo-like eczema. Food tests positive.

CASE 50. F. L., aet. 10 months, and bottle fed for last four months. Following an earache of one week without any applications, the skin around the left ear and of the cheek broke out into papules and masses of redness and crusting. Food tests positive.

CASE 51. M. C. S., aet. 12, schoolgirl. The skin is generally dry and harsh; the scalp is dry and finely scaling, and there are pinhead papules generally over the whole body. Food tests positive.

CASE 52. I. S., aet. 8 months. Bottle fed. Two weeks' duration. The skin of the back and flanks is very red and finely papular. Food tests positive.

CASE 53. H. M., aet. 7 months. Breast fed. Eczema for eight weeks. At first vesicular, and now the skin of the face is reddened and thickened. Food tests positive.

CASE 54. N. H., aet. 5 months. Breast-fed boy. The disease has been evident for five weeks. The face and scalp are a mass of excoriations and crusts. Albumin +.

CASE 55. H. K., aet. 5 months. Breast fed. Intertrigo for three months, general eruption for two days, consisting of flat-topped, small-sized, pink papules on the forearms, trunk and legs. Fat +, starch +.

CASE 56. R. H., aet. 16 months. Second attack similar in nature to the first, one year previously. The face, back of hands, and bends of knees are red, moist, oozing and crusting. Milk +, egg albumin +.

CASE 57. I. M., aet. 3. Duration, perhaps a year. Both arms are raw. Child much neglected. Starch +.

CASE 58. M. L. R., aet. 8 months. Breast-fed boy. Eruption present almost from birth. The buttocks show fine papules and excoriations. The mother says that the baby always breaks out after eating eggs. Egg albumin +, wheat +.

CASE 59. O. C., aet. 10. Schoolboy. There are infiltrated and excoriated papules on the deltoid areas and on the abdomen. Albumin +.

CASE 60. N. L., aet. 16 months. The cheeks and ears are erythematous and mildly exudative. Albumin ++.

CASE 61. D. J. S., aet. 3 months. Breast-fed boy.

Duration, two months. Both cheeks show indefinite, pink, dry and scaling areas. Fat +.

CASE 62. M. L. P., aet. 1 year. Breast-fed boy. The scalp and face are red and moist. Albumin +++.

CASE 63. R. M., aet. 7 months. Duration, six months. A generalized vesicular eczema, most emphasized on the face, scalp, neck and upper chest. Albumin +++.

CASE 64. M. S., aet. 6 months. The skin of face, ears, trunk and arms is brilliant red, oozing and excoriated. Albumin +.

CASE 65. I. S., aet. 3. This girl has spent more or less of her life in the skin ward. The whole body is red, at times moist, at others dry and scaling. Albumin +.

CASE 66. M. C. S., aet. 12. Schoolgirl. The skin is generally dry and harsh and easily irritated. There are pinhead papules over the whole body. Fat +, starch +, milk +.

CASE 67. S. H., aet. 3 months. For two weeks the scalp and upper part of the cheeks have been erythematous, vesicular and crusting. Albumin +.

CASE 68. H. V., aet. 8 months. Duration, three months. Subacute exudative condition of the face, scalp, neck and upper chest. Albumin ++, starch +.

CASE 69. R. C., aet. 2 months. Breast-fed girl. Vulvar region is claret-red, edematous and moist. Fat +.

CASE 70. E. V., aet. 15 months. Duration, 12 months. The child is nursed and given Mellin's Food, cake, bread, etc. The cheeks and chin are red, infiltrated and crusting. Food tests (raw\*): egg +. After one week's elimination of egg in all forms the skin is merely erythematous.

CASE 71. R. D., aet. 4 months. Duration, 3½ months. The child is breast and bottle fed. Infiltration, fissures and crusts appear on the head and trunk. Food tests (raw): milk +.

CASE 72. J. T. McC., aet. 11. Schoolboy. There was an attack of eczema six years previously. Oozing and crusting now appear on scalp, on forehead and behind ears. Food tests (proteids†): pork and tomato ±.

CASE 73. I. F., aet. 12. The disease started ten years previously as an impetiginous eczema, following pediculosis, and has continued down to the present day. Under our care in the hospital ward, the child has promptly recovered but the disease has invariably returned when the child has gone home. Food tests October, 1915 (raw): egg +, butter ±; September, 1916 (proteids), all negative; November, 1916 (proteid), wheat +, tomato +, and egg +.

\* (Raw) means that raw materials (egg albumin, fat-free milk, lactose, or oatmeal water) have been used as testing agents.  
† (Proteid) signifies the use of the professionally prepared so-called proteids.

CASE 74. C. T., aet. 5. Duration, 4 years. Oozing and crusting condition of the scalp. Food tests (proteids): corn ±, peas ±, strawberries ±.

CASE 75. M. S., aet. 10 months. Duration, 8 months. Multiple excoriations of face. Food tests (proteids): pork ±, egg +, beef ++. Disease continued with ups and downs. The child was referred to the pediatric department, and their last record states that the baby vomited after nearly every feeding.

CASE 76. F. S., aet. 10 months. Duration, 5 months. Excoriations on the cheek, and a moist, infiltrated, reddened area on the trunk. Food tests (proteids): lactalbumen ±, casein ±, barley ++. This baby subsequently visited a children's hospital and was given barley water, and returned to us soon after with small indefinite papules on the face, trunk and extremities.

CASE 77. S. G., aet. 2 years. Duration, 1½ years. A moist eczema of face, neck, scalp, flanks, back and legs. Food tests (proteids): corn ++, wheat +, rice +.

CASE 78. J. R., aet. 3. Duration always. The face is moist, red and crusting. Food tests (raw): all negative.

CASE 79. M. P., aet. 19 months. Duration, 14 months. The child was breast fed for 11 months. Food tests (raw): egg ++, oats +.

CASE 80. J. B., aet. 7. The disease began at the age of one month. The arms, flanks and lower legs are moist, fissured and crusting. Food tests (proteids): peas ±, oats ±, egg +.

CASE 81. R. S., aet. 8. Duration, 8 months. The disease began on the scalp and eyelids. The mother noticed that the ingestion of tomatoes and strawberries always produced exacerbations. Food tests (proteids): egg ±, casein ±.

CASE 82. R. L., aet. 2 years. Duration of disease, one month. The skin is red, infiltrated and dry. Food tests (proteids): all negative.

CASE 83. Y. C., aet. 3 years. Three weeks' duration. The child was nursed up to the age of two years. The cheeks and thighs are dry and scaling in patches. Food tests (raw): casein +.

CASE 84. J. C., aet. 2 years. Duration, 11 months. There are dry and scaly areas, especially about the shoulders. Food tests (raw): all negative.

CASE 85. K. K., aet. 12. Schoolgirl. Duration on and off for 7 years. The skin is generally thick, dry and excoriated. Food tests (raw): all negative.

CASE 86. E. S., aet. 13 months. Duration, 4 months. The child was nursed for eleven months. The forehead is infiltrated, red and excoriated, with a tendency toward papulation. Food tests (raw) all negative.

CASE 87. J. K., aet. 1 year. Duration, 6 months. The face and scalp are covered with pea-sized, brick-red, rather moist, somewhat excoriated maculo-papules. Food tests (proteids): rye ++.

#### METHODS OF EXAMINATION OF FECES.

##### *Macroscopic.*

1. Note the color, odor, and consistency.
2. Look for mucus and for food residue, such as cellulose from vegetables, meat fibers, or gelatinous masses of undigested starch.
3. Reaction to litmus. Of considerable value in babies, but of little importance in adults.

##### *Microscopic.*

1. To disclose neutral fat, rub up a small amount of feces with water on a glass slide and add a few drops of saturated solution of sudan iii. Neutral fat globules stain a bright orange red. Any neutral fat is abnormal.

2. To determine "total" fat add 1-2 drops of glacial acetic acid and a few drops of sudan iii and heat. In this way all fat present is broken down into globules of fatty acids which stain a bright orange yellow. All stools contain a not inconsiderable amount of "total" fat, for which there is no acknowledged standard of measurement. Experience alone determines one's own standard.

3. To discover starch, rub up a small portion of the mass with water and add Lugol's solution. Starch granules become blue, and anything more than the smallest amount of starch is to be considered abnormal.

Such are the methods adopted by Dr. Lewis Webb Hill, to whom I am greatly indebted for many of these examinations.

#### STOOL EXAMINATIONS.

CASE 1. A child of three years, living upon an essentially adult diet. The disease had been present for eighteen months, and at entrance to the hospital the face, neck, axillary regions and chest were moist and oozing. The stools showed a moderate amount of free fat and soap and much coarse vegetable matter. After a two weeks' suspension of all fat from the diet the face was almost free from involvement. The child was then given the regular house diet, and skin and disposition rapidly reverted to the conditions observed at entrance. Fat-free diet was again instituted, and twenty-five days later the child was discharged free from all outward manifestations of her disease, save a slight scaliness behind the ears.

CASE 2. The child had been allowed to eat everything. Six months earlier a red area developed on the face, and was treated without success by several doctors. On entrance, the whole face and neck were covered with moist crusts, and the body showed generalized but isolated areas of infiltration, oozing and crusting. The stool was dark brown, ill-smelling and alkaline and revealed a large amount of free fat and soap. A fat-free diet was administered and in sixteen days fat had disappeared from

the stools and the skin was greatly improved. Unfortunately, the parents then took the child away.

CASE 3. A child of four years showed on his face dry, cracking lesions and on his body a papular eruption. There were no fats in the feces but large numbers of vegetable fibers and cells, algae, cellulose and fruit and vegetable debris. The patient was put on a modified house diet, and in eleven days there were no longer signs of eczema. The child was then given a weighed carbohydrate diet, and one week later the eruption was as bad as at entrance. The proper diet was restored, and in two weeks the child left the hospital apparently well and was still free from eczema when it reported, two weeks later, the proper diet having been adhered to.

CASE 4. D. F., aet. 5. Eczema has been present for seven months and is rather generally distributed. The skin is slightly reddened, roughened, infiltrated and fissured and a few papules are evident. Stool negative.

CASE 5. J. R., aet. 20 months. Breast-fed girl. Child observed in second attack. The face and ears are red, excoriated and exuding. Nits are present. Food tests negative. Stool negative.

CASE 6. M. L. P., aet. 1 year. Breast-fed boy. Face and ears show pink-red papules. Albumin ++++. Stool negative.

CASE 7. M. S., aet. 11. Schoolgirl. Eczema "for years" and at present the face is red, dry and furfuraceous and the skin of the body is generally red, thick and fissured. Food tests are negative. Stool negative.

CASE 8. H. M., aet. 9 months. Duration of disease, 8 months. Breast fed. The skin is reddened and thickened, and in places moist. Food tests are all positive. Stool negative.

CASE 9. R. M., aet. 7 months. Disease present for 6 months, and consists of generalized vesiculation, especially on scalp, face, neck and upper chest. Albumin ++++. Stool negative.

CASE 10. P. F., aet. 11 months. Disease present for ten months. Breast fed for 3½ months. Face and left shoulder show a few persistent areas of red, slightly infiltrated, dry and slightly scaling skin. The stool shows an excess of fat.

CASE 11. M. S., aet. 6 months. Face, ears, neck, chest, trunk and arms are brilliant red, oozing and excoriated. Albumin +. The microscope shows a slight amount of fat and a considerable degree of soap.

CASE 12. I. S., aet. 3. A frequent visitor to our skin ward. The whole body, including the face and scalp, is red and infiltrated, in places dry and in places moist. Albumin +. Macroscopically a typical soap stool; microscopically there is a considerable amount of neutral fat and an excess of soaps.

CASE 13. M. C. S., aet. 12. A schoolgirl. The skin is generally dry and harsh and easily irritated. The scalp is dry and finely scaling. There are pin-



head papules generally over the whole body. Fat +, starch +, milk +. Microscopically the stool shows a moderate excess of soaps.

CASE 14. J. T., aet. 20 months. Disease of 3 months' duration. Greasy crusts on scalp, and crusts and fissures on face. Food tests are negative. Microscope shows a moderate excess of soaps but no free fat.

CASE 15. E. G., aet. 7 months. Breast fed. Duration, 2 months. Over the whole face are thick, dirty, heaped-up crusts and excoriations. There are also a few papules on both arms. Nov. 30 and Dec. 8 and 13, a moderate amount of soaps were found microscopically.

CASE 16. T. J. G., aet. 21 months. Disease evident for 18 months. The right side of the face is pink and moist and shows a few papules. Albumin +. The stool is strongly acid, loose, foul, brothy, and shows gas bubbles. A few neutral fat droplets are present as well as an excess of soap. A fermentation type of stool, with moderate fat and sugar indigestion.

CASE 17. S. H., aet. 3 months. Duration, 2 weeks. Scalp and upper cheeks are erythematous, vesicular and crusting. Albumin +. The stool is soft, yellow, very acid and contains many soft small curds, considerable mucus and considerable fatty acids and soaps.

CASE 18. H. S., aet. 3 months. Duration of disease the same. Forehead and cheeks are oozing and crusting. Food tests are negative. Stools are rather watery, brownish-yellow, slightly acid, and contain a small amount of fat.

CASE 19. I. S., aet. 8 months. Bottle fed. Disease 2 weeks' old. Skin of back and sides very red and shows pinhead papules. Food tests are all positive. Five examinations of the stools revealed many soap suds, some soft curds, some mucus. The sixth test, when the eczema was practically gone, revealed a normal stool.

CASE 20. E. B., aet. 6 weeks. Breast-fed girl. Two weeks' duration. There are minute miliary papules over both cheeks and on the scalp. The diaper region is generally reddened. Food tests are negative. Stool is spongy and yellow; contains curds and a moderate increase of neutral fats and soaps.

CASE 21. C. F., aet. 6 months. A girl, breast fed for six weeks only. Eczema present for three months. The cheeks are fiery red and moist. The hands, forearms, lower legs and feet show intracutaneous papules. The stool shows a very rare neutral fat droplet and a moderate excess of soaps and fatty acids.

CASE 22. R. F. G., aet. 6 months. A breast-fed girl. Duration, 3½ months. The cheeks show small areas of redness, moisture and excoriation. The stool is very acid in reaction and shows a moderate excess of neutral fat and a very large excess of soap and fatty acids.

CASE 23. E. L. Y., aet. 2 years. Duration, approximately 18 months. At first marked egg ana-

phylaxis was present but eventually outgrown. For last few months the disease has been present in the scalp, which at present is buried under a mass of white, granular scales. Stool shows a large excess of soap.

CASE 24. F. G., aet. 1 year. Scalp, face, lower arms and back are red, infiltrated, oozing and crusting. Food tests are all positive, Oct. 20, and all negative two days later. Stool shows a large excess of undigested starch.

CASE 25. H. V., aet. 8½ months. A breast-fed boy. Duration, three months. Scalp, face, neck and upper chest are mildly exudative. Albumin ++, starch +. The stool is green, loose, strongly acid, and contains a moderate excess of starch—"a typical stool of carbohydrate indigestion."

CASE 26. R. C., aet. 2 months. A breast-fed girl. Disease present since birth. The vulva is red, moist and edematous. Food test is positive to fat. The stool shows a typical fermentative diarrhea due to excessive carbohydrate fermentation.

CASE 27. Miss P. A., aet. 15, has a typical nummular eruption on the arms and legs, of two years' duration, and has consulted two other doctors. In these oval or circular, sparsely scattered areas the skin is infiltrated and finely papular. Dr. Hill reports: a loose, foul stool containing an excess of cellulose residue in the form of pieces of orange and gelatinous masses of vegetable material. Microscopically there is no excess of fat or of starch. A stool of cellulose indigestion, and the patient probably eats too fast and does not chew her food properly. She is unable to digest her coarse food. Such feces indicate inability to take care of starch if it is in the form of hot bread, large amounts of potato, etc.

CASE 28. Miss. E. A. C., aet. 15, developed eczema five years previously after an appendectomy, and now presents a lichenoid, excoriated eruption on the flexor surface of the upper and lower arms, over the scapulae and about the neck. Dr. Hanson reports: microscopically, no free fat or starch, but there are small amounts of soaps and undigested matter. Gas bacillus present. The test shows evidence of carbohydrate fermentation.

CASE 29. Miss M. E., aet. 7, presents a universally brown-red, leathery, and excoriated skin. The child has had eczema for 4½ years and is at present thoroughly exhausted mentally and physically from the intense itching and consequent loss of sleep. Dr. Hanson reports: no free fats or fatty acids, very little starch, but there is considerable cellulose and marked evidence of carbohydrate indigestion. Gas bacillus present. The movement not formed; the odor rather bad.

CASE 30. F. L. Y., aet. 5. Disease began at age of six months, and has persisted, despite treatment from a pediatricist. At present there is a scaling area above the right eyebrow and many finger tips are dry, red and cracked. Dr. Hill reports "a very peculiar stool. Macroscopically the stool is hard, formed and large, and looks normal, but when broken apart is seen to consist almost entirely of green peas, most of which are not at all digested. Microscopically, there is no excess of fat, but nat-



usually a large excess of starch." One week after the reformation of the diet the mother reported that a previously foul breath had become sweet; that a nervous, irritable disposition had become docile; that chronically pale cheeks had become pink; and that the eczema had decidedly improved.

CASE 31. V. T., aet. 14 months. The child was nursed for three months, and then oatmeal water, eggs and various patent foods were added to the diet. With these changes in the diet, eczema developed, and with the administration of eggs vomiting and convulsions appeared. The face is red and covered with fine excoriated papules. Stool: soft, grayish brown, acid and contains much cellulose; starch is increased in amount. The eczema cleared up within a week under proper diet.

#### RÉSUMÉ OF FOOD TESTS.

##### 1. *Moist Eczema.*

Negative to all foods injected .....	14
Positive to one food injected .....	13
Positive to more than one food injected ..	22
Positive to egg albumen .....	23
Positive to salt-free butter .....	7
Positive to fat-free milk .....	11
Positive to oatmeal or lactose .....	6

Of those injected with the so-called proteins there were two children positive to each of the following substances: pork, tomato, wheat, corn and peas; and one positive to strawberry, rice, oat, casein and beef.

##### 2. *Dry Eczema.*

Negative to all foods injected .....	7
Positive to one food injected .....	4
Positive to more than one food injected ...	9
Positive to egg albumen .....	4
Positive to salt-free butter .....	5
Positive to fat-free milk .....	5
Positive to oatmeal or lactose .....	0

Of those injected with the so-called proteins there were two children positive to casein, one positive to lactalbumen and one to barley.

##### 3. *Papular Eczema.*

Negative to all foods injected .....	8
Positive to one food injected .....	1
Positive to more than one food injected ..	9
Positive to egg albumen .....	3
Positive to salt-free butter .....	2
Positive to fat-free milk .....	2
Positive to oatmeal or lactose .....	2

Of those injected with the so-called proteins, there was one child positive to rye and one to wheat.

#### RÉSUMÉ OF STOOL EXAMINATIONS.

##### 1. *Moist Eczema.*

Stools negative .....	3
Stools containing an excess of fat or soaps	11

Stools containing an excess of starch .....	2
Stool containing an excess of cellulose ....	1
Fermentative stools .....	2

##### 2. *Dry Eczema.*

Stools negative .....	2
Stools containing an excess of fats or soaps	3
Stools containing an excess of starch .....	2

##### 3. *Papular Eczema.*

Stools negative .....	1
Stools containing an excess of fats or soaps	3
Stools containing an excess of cellulose ....	3
Stool containing an excess of starch .....	1

#### CONCLUSIONS.

At the end of three years of concentration on the subject of eczema and of working and pondering over one positive and two possible accessories to our therapeutic armamentarium, I feel justified in making the following deductions:

1. There are two great types of eczema,—those curable in the hands of an expert and those which resist even the most scientific care. These two classes cannot be distinguished objectively.

2. Crude coal tar when properly used is curative in the majority of instances of moist eczema, and has proved of inestimable value.

3. There is no doubt that eczematous individuals, both young and old, react positively in decided numbers to the food tests and stool examinations—in fact we have seen among the children described in this communication 66% of positive food tests and 81% of abnormal stools. Therefore, we do not hesitate to say that food plays some rôle in the abnormal composition of individuals afflicted with chronic, rebellious eczema.

4. Proper feeding, as indicated by food tests and stool examinations, is capable in very young children (who eat elemental food), of producing a cure or of paving the way for a cure in a decided majority of cases.

5. In older children and in adult life the same successful results have been obtained only in a small minority of the cases; but it is possible that this failure is due less to the value of this same knowledge than to the fact that the food of this class of patients is practically always a complex substance and hence incapable of such scientific and exact preparation as is possible in the comparatively simple modification of milk. Until, therefore, we are able by means of special diet kitchens, let us say, to synthesize the food of older children and adults, we cannot hope to make use of these two modern therapeutic adjuncts in our fight against unamenable eczema.

## Original Articles.

## LIPOIDS IN 131 DIABETIC BLOODS.

BY HORACE GRAY, BOSTON.

[From the Department of Biological Chemistry,  
Harvard Medical School.]

## SYNOPSIS.

Nomenclature  
 Base table of data  
 Specimens *vs.* cases  
 Technique  
   Extraction  
     Bloor's fat method  
     Lecithin method  
     Cholesterol method  
     Time required for each method  
 Formulae  
   Determined values  
   Calculated values  
 Checks  
   Discussion of results  
   Clinical simplification  
   Threshold  
   Average and maximal diabetic values  
   Plasma *vs.* corpuscles  
   Anesthesia  
   Sex  
   Duration  
   Prognosis  
   Weight  
   Dietary fat  
   Fasting  
   Acidosis  
   Carbohydrate balance  
   Blood sugar  
   Corpuscle per cent.  
   Cloudy plasma: lactescence *vs.* hyperlipemia  
   Individual patients, instead of groups, in relation to some of the above factors.  
   Clinical severity  
 Summary

These analyses were undertaken as a continuation of the series of 38 reported by Professor Bloor September, 1916, on patients of Dr. E. P. Joslin. For the clinical data and much other assistance, I am indebted to the latter; and to the former for frequent and extremely obliging help and advice on the details of his methods.<sup>1-5</sup>

<sup>1</sup> Bloor, W. R.: A Method for the Determination of Fat in Small Amounts of Blood, *Jour. Biol. Chem.*, April, 1914, xvii, 377-384. This is the method which I have called Bloor's Fat-Method, throughout this paper.

<sup>2</sup> Bloor, W. R.: A Method for the Determination of "Lecithin" in Small Amounts of Blood, *Jour. Biol. Chem.*, August, 1915, xxii, 133-144. The AgNO<sub>3</sub> precipitation has been superseded by the method quoted below (\*).

<sup>3</sup> Bloor, W. R.: A Simple Method of Converting the Duboscq Colorimeter into a Nephelometer, *Jour. Biol. Chem.*, August, 1915, xxii, 145-149.

<sup>4</sup> Bloor, W. R.: Fat Absorption and the Blood Lipoids, *Jour. Biol. Chem.*, November, 1915, xxiii, 317-326.

<sup>5</sup> Bloor, W. R.: The Determination of Cholesterol in Blood, *Jour. Biol. Chem.*, March, 1916, xxiv, 227-231.

<sup>6</sup> Bloor, W. R.: Fat Assimilation, *Jour. Biol. Chem.*, April, 1916, xxiv, 447-460. Includes revised Lecithin method.

<sup>7</sup> Bloor, W. R.: The Distribution of the Lipoids in Human Blood, *Jour. Biol. Chem.*, July, 1916, xxv, 577-599.

<sup>8</sup> Bloor, W. R.: The Lipoids of the Blood in Diabetes, *Jour. Biol. Chem.*, September, 1916, xxvi, 417-430.

The study of patients from the dietary and metabolic viewpoints has produced blood micro-methods for all four of the familiar food elements: protein (Folin), carbohydrate (Lewis-Benedict), fat (Bloor), and salt (McLean-Van Slyke). The first two of these are both generally used in hospitals and generally understood outside them. Neither the plasma-chlorides nor the lipoids, however, have yet received the general attention which they merit. In the case of the lipoids the cause has probably been fivefold:

1. The confusing nomenclature.
2. The confusing number of substances determined.
3. The confusing variation of methods with resultant varying values.
4. The recent improvement of methods.
5. The time required.

## NOMENCLATURE.

The nomenclature has been recently discussed,<sup>7</sup> and will, therefore, be only graphically reviewed. Each vertical column consists of words used more or less synonymously, the first term in each being used throughout this paper.

	Lipoids	
	Blood-fat	
	Lipins	
	Fats	
Glycerides	"Lecithin"	Cholesterol
Glycerides of fatty acids	Phosphatides	Cholesterin
Neutral fats	Lipoid phosphorus	
True fats	Lecithin and Cephalin	
Ordinary fats		
Uncombined fat	Cyto-lipoids	
Fat	Lipoids	

The results are partly determined and partly calculated from the following three methods:

BLOOR'S FAT METHOD	LECITHIN METHOD	CHOLESTEROL METHOD
--------------------	-----------------	--------------------

giving respectively

I. Total cholesterol	I. Lecithin	Total cholesterol including
II. Total fatty acids combined in	II. Cephalin	a free cholesterol
a glycerides	III. Other phosphatides	b cholesterol as esters of fatty acids
b phosphatides		
c chol-esters		

Particular attention is directed to (1) the term "Bloor's fat-method," which has seemed preferable to Bloor's original name, "total-fat," so easily confounded with the name "total lipoids" (total ether soluble, aggregate fatty substances), and in fact amounting to only 91% of the latter "total"; also to (2) the use of "lipoids" for the fatty substances in general, and not in the restricted way as a synonym for "cyto-lipoids."

The analytical and clinical data were collected in a table which was then used as the basis for all the later tables and deductions given below. Expense unfortunately makes reproduction of this table of basal figures out of the question. If any question should arise, I should be glad to give the actual pertinent figures from the table.

## SPECIMENS VS. CASES.

The 131 bloods analyzed represent specimens, not patients, of whom there are 86 in this series. If Bloor's fat-method ("total-fat") be taken as a criterion, then the most similar values are found in 4 different persons.

TABLE I.  
SIMILARITY OF VALUE IN DIFFERENT PERSONS.

Spec. No.	NAME	HISTORY No.	
129	Ch	1086	} 1.9%
517	Em	1055	
522	Sw	1228	
558	La	1233	

TABLE II.  
DISSIMILARITY OF VALUES IN SAME PERSON.

History No.	No. of Spec.	Nearest	Farthest
La 1233	10	1.09 1.10	1.09 2.62
Cl 786	8	2.70 2.74	2.28 9.55
Oo 610	5	0.97 1.03	0.97 1.56
Sw 1228	4	0.78 0.90	0.62 1.09
Ma 1070	4	0.66 0.67	0.66 0.95
Er 1213	4	1.42 1.45	0.76 1.52
Wa 1085	3	2.74 2.94	0.64 2.94
Bo 1196	3	1.01 1.18	0.79 1.18
St 914	3	0.88 1.32	0.88 1.89
Mk 1252	2	0.81 0.83	0.81 0.83
Fl 1207	2	0.68 0.87	0.68 0.87
Po 1160	2	0.96 1.08	0.96 1.08
Ga 1227	2	1.05 1.61	1.05 1.61
Cw 942	2	1.06 1.53	1.06 1.53
Bu 615	2	1.55 1.75	1.55 1.75
Other 5 cases		One of necessary figures wanting	

But this similarity, in fact identity of value, is not found in different specimens from any of the 18 persons who have furnished more than one specimen. The nearest two values for each are given in Table IV, together with the number of specimens from that individual analyzed by this method. In other words, here are four patients agreeing more closely than any one

patient alone. Furthermore, each individual shows remarkably wide variations, as is also tabulated. Hence the justification for discussing primarily specimens rather than case-numbers.

## TECHNIC.

The methods used throughout have been exhaustively described by their author and will not be repeated. There are, however, a number of details that may be worth recording, or emphasizing.

## EXTRACTION.

The patient's blood may be kept from clotting by addition of the familiar crystal of potassium oxalate, making a strength of about 0.1%; or by saturated solution of sodium citrate, 1 drop to each 5 cc. or less of blood. With thorough shaking for 1 minute, the latter is sufficient to prevent coagulation and seems less apt than oxalate to result in hemolysis. Hemolysis when marked certainly makes an increased lipid yield.<sup>1</sup> In very hot weather more speed and more anti-coagulant may be necessary. That the amount of citrate recommended above is sufficient is supported by a recent statement: "Sodium citrate mixed with blood in the proportion of 1:100 inhibited coagulation for 4 days when kept at a temperature of 10° C."

Salant, W., and Wise, L. E.: The Action of Sodium Citrate and its Decomposition in the Body, Jour. Biol. Chem., December, 1916, xxviii, 27-58, p. 57.

According to the above proportion one drop of the saturated solution, which contains 0.77 parts of sodium citrate, should inhibit coagulation in 77 drops of blood, i.e., about 5 cc. Of this

Culbreth, D. M. R.: *Materia Medica and Pharmacology*, Phila. and New York, 1917, p. 707.

citratd blood 10 cc. are desirable, though 3 cc. are enough for determinations on the whole blood alone.

It is desirable to redistil both the alcohol and ether used for extracting the original whole blood and plasma, for taking up the dry residue in Bloor's fat-method and for making the oleic acid standard.

Pipettes made in this country are by no means so reliable as those of the standard German makers and often need to be recalibrated. It is convenient to get or make a 7 or 8 cc. pipette to use for extracts that one expects to be a little strong for 10 cc. yet weak for 5 cc.

Beakers 9 cm. high are vastly preferable to those only 6 cm., which require closer watching of their sides to see that the moisture does not gradually creep up and then spatter. The bottoms of such 150 cc. beakers will then measure 4-5 cm. across; the exact diameter does not matter but the flatness does. It is important to go over a large lot and select the flatter ones. With these evaporation on an electric stove proceeds more smoothly.

Evaporation to dryness in all three methods requires less attention when done on the water bath rather than the electric stove.

After measuring out the 3 cc. portions into about 60 cc. of alcohol-ether, a routine practice has been made of letting stand 48 hours before raising to a boil. No attempt has been made to determine whether as complete extraction would be obtained if the boiling, cooling and making-up were done immediately—an obvious desideratum in applying the method to clinical work.

#### BLOOR'S FAT-METHOD ("TOTAL-FAT").

The standard has been made by weighing out Kahlbaum's "K" oleic acid, 210-240 mg., dissolving in redistilled ether and washing over with repeated portions, making 125 cc. ether in all, into a 500 cc. volumetric; making up with redistilled alcohol nearly to the mark; letting warm up again to room temperature and filling to the mark. Of this solution 5 cc. equals slightly more than 2 mg. oleic acid. Since one lot of this solution was noted to increase in value, presumably by evaporation, though the cork was neither accidentally left out nor noticeably loose, the making of large amounts at a time has not seemed advisable. The stopper should be of cork, forced in hard.

The evaporated residue with the added 5 cc. alcohol-ether, and the parallel 5 cc. of standard, are warmed just to a boil on the electric stove. Rapid boiling is facilitated by a little sand, previously cleaned with acid and alkali. On removal, the beakers are rotated gently half a dozen times while the excess ether is blown off. Four pairs at a time may be carried to this point. Distilled water, 50 cc. from a delivery pipette or even a simple calibrated graduate is run down the side of one unknown and its standard, then the  $\text{HCl}$   $\frac{1}{4}$  (1:3). This may conveniently be kept in an unstoppered pint bottle with the 2 pipettes standing in it. Part of the five minutes after precipitation may be employed in transferring to the nephelometer tubes.

Bubbles have been frequent in the standards and nearly invariable in the unknowns. The high reflection from these increases the value, and their removal is, therefore, essential. I have used several methods:

1. Blowing off the excess ether longer and with more shaking of the beaker.
2. Heating the tubes in a bichromate-sulphuric acid cleansing solution weekly.
3. Boiling the distilled water, then cooling it to room temperature before use. Not much help.
4. Tapping the tubes against a block of wood with 2 holes, which is useful for carrying the tubes into a dark room next door. Though one tube becomes free of bubbles sooner, still it should be tapped approximately as often as the other, so that whatever disturbance there is of the colloids may be equal in both. Often necessary.

5. Inverting two or three times. Seldom necessary.

After putting the tubes in the nephelometer, one should examine them again to make sure that the side toward the light has not been smeared with the moisture which often gets on the fingers during the tapping just mentioned.

The N sodium ethylate may be conveniently made as follows: metallic sodium is taken from the tin; or from paraffin oil, in which case it is wiped with filter paper; a piece cut off and peeled, weighed to slightly more than 2.3 g., agitated with forceps in about 50 cc. ordinary ethyl alcohol till clean white, i.e., about 10 seconds; transferred to 100 cc. freshly distilled absolute alcohol in a 200 cc. Erlenmeyer flask, covered with a beaker, put under the cold tap till dissolved, i.e., 20-30 minutes; plugged with a rubber stopper pierced by a 2 cc. pipette and kept in the dark. The solution generally acquires a light brown color in 24-48 hours. Peelings should be left in the air until thoroughly oxidized to a crumbly white powder— $\text{NaOH}$  and  $\text{Na}_2\text{CO}_3$ , and only then thrown in the slop jar.

That 2 cc. of this solution is ample to saponify is clear from the following calculation: suppose 5 cc. of the standard total-fat solution as made contains 2.3 mg. oleic acid. Now the amount of unknown extract used must contain less than  $\frac{5}{3}$  as much, since even that requires

a correction, and any stronger solution cannot be read in the nephelometer at all. This amount of extract then, whether it happens to be 10 cc., 1 cc., or even  $x$  cc. of a diluted extract (say 10 cc. of the lipemic extract made up to 100)

cannot contain more than  $\frac{5}{3} \times 2.3 = \frac{11.5}{3} =$

3.8 mg. fatty acid. Now 1 cc. N Na-ethylate will saponify 1 cc. N oleic acid,  $\text{C}_{17}\text{H}_{33}\text{COOH}$ ,  $\text{C}_{18}\text{H}_{35}\text{O}_2$ , which contains 282 mg., i.e., 74 times as much as the 3.8 mg. that can be determined nephelometrically.

#### LECITHIN.

The phosphate "stock" was made according to the published directions,<sup>2</sup> but the "standard" was made by diluting 30 cc. up to 500 cc., after which 5 cc., instead of the original 3 cc. = 0.15 mg.  $\text{H}_2\text{PO}_4$ . The fourth lot of standard became mouldy two days after making, and simultaneously weaker—an event which was surprising in a weak phosphate solution (well-recognized medium for moulds), only because it had been absent in the first three, made from the same stock under apparently identical laboratory conditions. The next lot was, therefore, boiled and cooled before filling to the mark.

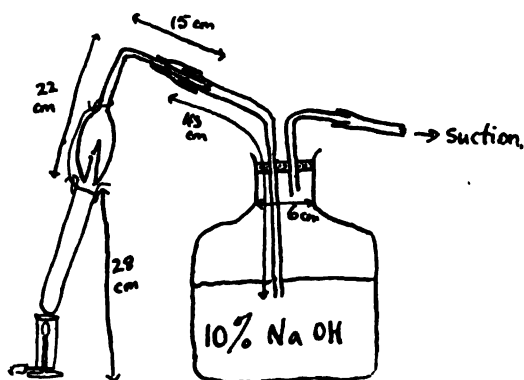
A convenient way to hang the tubes in the water bath is by a rubber band round the necks of every pair, across a glass rod; or if that does not lower them the desired centimeter into the

water, then across a bent wire. When the bath is steaming actively, the necessary shaking until boiling can be comfortably done with a clean brass crucible tongs, each tip in one of the pair of tubes.

The Folin-Denis draught apparatus,<sup>9</sup> as modified somewhat by Dr. Bloor, seemed rather more compact than the original and was, therefore, copied. Four absorbers can be arranged in one cork. The tubes are hung by copper wire, about 25 cm. of 16 gauge being needed for each. The other measurements are given approximately in Diagram I.

<sup>9</sup> Folin, O., and Denis, W.: Jour. Biol. Chem., 1911-12, xi, 503.

DIAGRAM I.



The first stage of digestion at a low boil is difficult when the tubes and beads are new and not yet etched, for then the boiling is apt to be either wanting or too active; under these circumstances 30 minutes of intermittent attention has been satisfactory. For the second stage the "gradual" raising of the flame is necessary only so far as to prevent the fumes from flooding the absorber and so overflowing into the air of the room. The nitric fumes will be off after 3-5 minutes; then one must watch more carefully since the usual ten minutes may easily make the tube go dry and crack.

It is often convenient to stop for the night at the end of digestion, or occasionally at the end of the first stage. This should make no difference theoretically, and practically does not. In the following duplicates the first stage of each first specimen was done, and 8 days later the rest of the determinations on those first specimens and the entire determinations on the second specimens.

I.	.500	.611	.336	.205	.381	.440
II.	.500	.611	.307	.212	.381	.428

The cane-sugar solution moulds easily and has, therefore, been boiled about every fortnight.

For the titration the alcoholic phenolphthalein solution must be 0.3%, not the common 1%, for that makes a faint cloud.

For acid  $H_2SO_4$  1:1 was used. The NaOH need be only approximately 20%. In general, not more than 3 cc. should be necessary, provided the digestion is sufficiently prolonged.

The manufacture of the wonderfully delicate Kober-Egerer modification of the Pouget-Chouchak reagent has been the greatest difficulty of these analyses. I have followed the directions carefully in making sodium molybdate and from that the strychnine molybdate, several times with success, but also often without, so that I have had to depend repeatedly on Dr. Bloor's kindness in making it for me.

After precipitation of the phosphorus in the parallel unknown and standard 10 cc. aliquots, by running each into a 50 cc. volumetric containing the above reagent, the flasks should be made up to the mark promptly, to equalize the condition of the colloids.

The values in this paper are comparable with each other and also with the normals quoted, since all have been obtained by the same method,—Bloor's modification without sodium ethylate. But in case the reader should wish to compare them with diabetic values from other laboratories, it should be noted that different values, *e.g.*, for normal, are obtained by other methods, of which there are several in the literature.

Owing to the expense of acetic anhydride, Dr. Bloor now recommends 1 cc. instead of 2 cc. That this is equally satisfactory is shown by the following duplicates:

2 cc.	.495	.730
1 cc.	.500	.724

The electric bulb used has been a 100 w. Mazda nitrogen filled. After two of these had died of age within 6 months, without any rough usage whatever, the expense made it seem desirable to get along with an ordinary bulb. A 25 w. was difficult, however, and even a 40 w. so unsatisfactory that I procured another like the original. Probably the ordinary 100 w. Mazda, not gas-filled and therefore cheaper, would be satisfactory.

The Corning Daylite Glass Set B 30 at my disposal consisted of three plates. These absorbed not only the yellow rays, but so much of the illumination that only 1 plate could be used with the 25 w. bulb, and with the 40 w. not more than 2. With the ample illumination of the 100 w., curiously enough, 2 plates remained more satisfactory than the full set of 3. This point was confirmed by another observer, skilled in reading the colorimeter, as also the observation that the use of no plate gave the same reading as the blue-green alone. With the weak bulbs, when only 1 plate could be used, the most satisfactory to my eye was the blue-green, 78.5%; then the pale-purple, 59%; and least the violet, 115%.

The use of the colorimeter or nephelometer has many pitfalls. These have been commented

on by various observers, no one of whom, however, seems to me to have altogether covered one of the most troublesome points.

- Kruss, G. and H.: Kolorimetrie und Quantitative Spektralanalyse, Ed. 2, Hamburg and Leipzig, 1909.  
 Kober, P. A.: Jour. Biol. Chem., 1913, xiii, p. 485.  
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The usual preliminary to reading an unknown is to read the standard as an unknown against itself, and to take the value as the potential height of the standard. This has been also stated in other ways. The procedure is about as follows: The standard on the right is set at say 20, then read on the left (1-5 times according to different authorities), and found to be say 20.2. It is left at that point and the standard on the right is replaced by the unknown which is then read. In the ensuing calculation the standard is 20, not 20.2. Even after a month's practice reading turbidities in some unpublished acetone determinations, I found that my readings were not consistently 20.2, but varied sometimes by more than  $2\% \pm$ , even when the instrument was not moved at all from its position in the light box. This was of course unsatisfactory. When, however, the preliminary was made to consist in setting the standard at 20 on both sides *and looking through the telescope carefully for a moment, the eye seemed to become trained*; so that after an interval of 10 seconds the standard *could* each time be read against itself within a variation of less than  $1\% \pm$  from the usual level of say 20.2. This balancing of the instrument was found necessary after each 4 unknowns.

For example, using 4 samples of the same chloroform extract and adding acetic anhydride and  $H_2SO_4$  to each like an unknown, the values got were: 16.6, 16.8, 16.7, 16.8, none of which varies from the average 16.7 by as much as 1%, which is much less than the error of the method as a whole. Other observers with the nephelometer or colorimeter recommend variously repeating the balancing after each 1, 2 or 4 unknowns.

Unknown readings below 9 or above 20 have always been rejected and done over again.

No attempt has been made to use for a standard the aqueous solution of Naphthol Green B suggested by Bernard and found satisfactory by Myers and Gorham.

Myers, V. C., and Gorham, F. D.: The Chemical Composition of the Blood in Health and Disease, The Post Graduate, 1914, xlix, 988.

(To be continued.)

## Medical Progress.

### PROGRESS IN DERMATOLOGY.

By JOHN T. BOWEN, M.D., BOSTON.

#### SCALP DISEASES AND HATS.

MANHEIMER<sup>1</sup>, the Secretary of the American Association for Promoting Hygiene and Public Baths, has written an article on this subject which embraces observations on the retail hat trade. He states that there are few positive data as to the prevalence of skin infection among the general population inasmuch as most of these cases are not reportable, but considers that a further administrative control is quite warranted. In the report of the Director of Child Hygiene of the Department of Health of New York City for 1910, it was found that 59 per cent. of the children examined had pediculosis capitis. In Philadelphia 33 per cent. were observed. The time lost from treatment for pediculosis was therefore vastly greater than that from all other affections put together. The writer emphasizes the enormous prevalence of pediculosis among the adult population generally, and states that it is one of the most frequent conditions met with in physical examinations of recruits for the army and navy. The spread of typhus fever by means of head lice is well known, and this circumstance should be given serious consideration in view of our present military preparations. With regard to syphilis, the comparative frequency of extra-genital initial lesions is referred to, Montgomery being cited as estimating that at least 10 per cent. of all the syphilis in this country is extra-genitally acquired. Many syphilitics offer lesions of the scalp, and in these cases there is great danger from the trying on of hats. Acne, impetigo contagiosa, and ringworm are diseases common in school children, which may be transmitted from one to another. Leprosy and erysipelas are other infectious maladies discussed. With regard to the *transmission of infection through hats*, a study of infections traceable to this source was undertaken. During the busy season a great many hat shops were inspected and many retail salesmen were questioned. By actual count, it was found that over 2% of the men trying on hats had noticeable eruptions on the face and forehead. Almost all of the salesmen admitted that no one would be forbidden to try on a hat, whatever might be the obvious condition of his forehead and scalp. Although the sweat bands of hats frequently become soiled, they are very rarely changed, unless in very bad condition. Almost all purchasers try on at least four hats before selecting one, hence the opportunity for a person with a discharge from his forehead infecting a number of hats. In the better class of shops a head conformator is used in order to shape the hat properly on a block, and this being used on all customers

may easily become contaminated. In some shops this has been provided for by the employment of small paper skull caps for the protection of the head. The universal use of this protective cap is advocated, not only in the case of conformators but while fitting hats in general, as the paper being cheap, it can be discarded after each use.

#### TREATMENT.

*Pure Coal Tar.*—Semon<sup>2</sup> relates his successes with coal tar at a base hospital in France, using a mixture containing equal parts of pix carbonis B. P., acetone and flexible collodion. He applied this paint in various skin affections, and the results were satisfactory with very few exceptions. It is to be remembered, now that it is so difficult to obtain synthetic and other drugs, that tar is cheap, easily procured, and requires as apparatus only an ordinary house-painter's brush. It is a cleanly application after it has dried, and all traces may be removed from the clothing and from the skin in a very few minutes by means of ether. It is remarkable how well the most delicate skins will stand pure tar. It was found to be well tolerated on the skin of the knee flexures, the elbows and the wrists, as well as on the scrotum. It was used with success in aural eczema. He considers it the best antipruritic medicament we possess, sometimes curing local itching when x-rays fail. It is remarkable how rapidly the pruritus is often cured—in fact, if improvement does not occur at once, the case may be regarded as unsuitable and not likely to be benefited by further application. The cases of skin diseases occurring in military encampments are naturally not very varied, and scabies formed the greater number of the cases observed. These cases were usually complicated with dermatitis, furunculosis, impetigo, eczema, etc. In cases where the dermatitis had ended in a chronic eczematous condition, the tar was found to be invaluable, but was useless in impetiginous states. Nor is it applicable where there is a complication with furunculosis. It is very valuable in lichenoid conditions, and when there is a dermatitis of a vesicular or papulo-vesicular nature. Seborrhoea was a frequent occurrence, possibly from the continuous use of steel helmets, and the impervious mackintosh linings of the cloth service caps. In some of the less acute forms of this affection, the tar paint was found to be very effective. In psoriasis, which is so closely related to seborrhoea, isolated plaques covered with thick scales were removed after four days painting, without any preliminary scrubbing or removal of the scales. It was found very valuable in lichenification.

*Sulphur Fumigations for Scales.*—Bruce<sup>3</sup> recommends in camps the treatment of scabies by sulphur fumigation. The patient is given a hot bath and allowed to soak for at least five minutes in the water, well lathered with soap,

either soft soap or yellow bar, and the skin scrubbed to open the burrows. He is then put in a warm cabinet used out of doors, his head protruding through an aperture in the roof, and subjected to the fumes of a lighted sulphur candle placed inside the cabinet. An orderly must remain in constant attendance with instructions to remove the patient at once if he should show signs of faintness or difficulty in breathing. He is kept in the cabinet from forty to fifty minutes, when the lid is quickly removed and the patient returns to the bathroom, where he puts on clean, warm clothing. It is of course necessary to send with the patient all his kit, including blankets and pillow, which may be treated by a steam disinfector, or in the cabinet when only one case is being treated. Boots and other leather articles may be treated by formalin spray or in the cabinet. It is important to see that the cabinet is warm and that it contains water vapor. The best results are obtained in recent cases with little induration, and one application will invariably cure these cases; when there is much induration, a second application is given at the end of forty-eight hours. There is immediate relief from itching and irritation, and sleep is not interfered with. It is very rarely that there is any resulting dermatitis; but if so, it is easily reduced. There is sometimes a slight general branny desquamation about forty-eight hours after the treatment. Bruce has treated about 200 cases, and has had two per cent. of returns, which he feels certain was due to the fact that some article of clothing had escaped disinfection. The treatment is rapid, certain and cheap, and one candle treats ten cases. If the clothing can be rapidly disinfected, cases can be returned cured to their units on the day of admission. The treatment if carefully carried out is in no way disagreeable to the patients.

*The Electric Cautery.*—Hazen<sup>4</sup> extols the value of the electric cautery in cutaneous surgery, especially in the treatment of soft corns, granuloma pyogenicum, lupus vulgaris, keratosis, papillomas, pigmented moles, xanthelasma, cancer, leukoplakia, and for the removal of tissue for diagnostic purposes, where malignancy is suspected. With regard to other modes of destruction, he considers that the caustics have certain marked disadvantages, in that the superficially acting ones are applicable only to surface cases, whereas in the more deeply acting ones, such as arsenic, the pain is usually very intense, and their use does not permit histological examination of the tissue removed. Carbonic dioxide snow is quick and usually not painful, but does not usually act deeply enough, and is worthless in cancer or tuberculosis. It is valuable chiefly in the case of certain angiomatas, and of lupus erythematosus. Hazen does not think, from his personal observation, that fulguration or diathermy have any value superior to that of the caustic. The electric



needle is well adapted to the removal of small superficial non-malignant conditions, as it is painless and leaves excellent cosmetic results. He considers that the field of the roentgen ray and of radium is small. For many affections they are ineffective unless their action is carried to the point of producing a burn, which is recognized to be a dangerous procedure. The curette does not touch the outlying morbid cells that are usually to be found in otherwise nor-

mal tissue. The knife is undoubtedly the cleanest way of treating many lesions, particularly the non-malignant neoplasms, and affords the best tissue for pathological examination. The actual cautery is better adapted to heavy work, the electric cautery to light work, as it is mechanically easier to operate and to keep at a steady heat, either dull red or bright red. It is exceptionally cleanly, and scrubbing and sterilization of the hands, of the instrument, and of the patient may safely be omitted. The operation may be done quickly and no dressings required, and the crust is the best dressing. It is the ideal instrument in cases where it is impossible to leave much margin. The writer states that all surgeons are agreed that in malignancy there are fewer recurrences after the cautery than after the knife. The cosmetic results are excellent, and tissue can be obtained for histological examination. In lupus vulgaris deep cauterization is necessary, as otherwise there is sure to be a recurrence. Soft corns are excised with a fairly heavy blade, and the lymph vessels that feed them at the base thoroughly cauterized. In the case of keratosis and papillomas the edge of the blade is inserted at the border of the lesion and then shoved along beneath it. Lesions on the eyelids and pigmented moles are very successfully treated by this method. Malignant growths are excised just as with the knife and local anaesthesia is employed in all cases.

*The Coolidge Tube in Non-Malignant Skin Affections.*—Howard Fox<sup>5</sup> states that only since he began to employ the Coolidge tube has his roentgen ray work in the treatment of skin diseases been really satisfactory. He strongly advocates the use of measured dosage in roentgen ray treatment, the Coolidge tube being used, as it greatly assists in attaining this object. On account of the remarkable constancy of this tube, it has been possible to treat cases of acne and eczema in a routine manner without the slightest danger of ill effect. Fox's best results were obtained in cases of eczema, of which all types were treated except the very acute vesicular forms. He treated 60 cases in all, varying from papular and vesicular eruptions of a few weeks' duration to chronic thickened patches that had lasted thirty years. Of these, 39 responded well to the treatment, especially nine cases in which the palms and soles were affected, and 2 cases in children of 4 and 2½ years respectively. In 16 cases the

lesions were either entirely cleared up or greatly improved, but later relapsed somewhat. In ten cases the results were indefinite and 3 cases failed utterly to respond. His results in psoriasis were, in general, disappointing, for although the lesions were quite easily cleared up, they promptly returned. It was found particularly useful in lesions of the hands and face when chrysarobin is objectionable, and in isolated patches. Of 19 cases treated, the results in 8 were distinctly favorable. In one, a patch of psoriasis on the abdomen, which had resisted chrysarobin, disappeared after five treatments. Four out of six cases of seborrhoeic eczema gave excellent results. In acne the treatment proved very satisfactory, 12 cases showing better results than could have been obtained, in the writer's opinion, by the usual method. An average of 8 exposures was given, and improvement usually showed itself shortly after the fifth treatment. All types and grades were treated, and the most striking improvement was shown in the severer cases. He considers the roentgen ray as at present the most efficient agent in the treatment of acne. Rosacea did not prove responsive, whereas it was successful in a few cases of lichen planus. As was to be expected from previous experiences, sycosis and localized pruritus were successfully treated.

*Toxicity of Salvarsan.*—Schamberg<sup>6</sup> of Philadelphia and his associates, working in the Dermatological Research Laboratories of the Philadelphia Polyclinic and College for Graduates in Medicine, undertook studies with the view of shedding some additional light on the complex and important subject of the toxicity of salvarsan. These laboratory experiments, carried on chiefly by means of rabbits and rats, were of a high degree of interest, and gave cause for the following conclusions:

1. Salvarsan may be used in concentrated solutions up to 0.6 gms in 10cc. in animals, without any evident increase of toxicity.

2. The failure to neutralize the solutions of salvarsan with alkali leads to an increase in toxicity of 50-60% in solutions of 1-2 to 1% concentration.

3. The addition of a moderate excess of alkali beyond the amount required for neutralization does not increase the toxicity, as determinable by the duration of life of the experimental animal. It is possible, however, that it may have other untoward effects.

4. The use of sterile fresh distilled water appears to possess advantages over sterile stale distilled or non-distilled water, as regards toxicity, although the difference in our experiments was not pronounced.

5. Salvarsan in alkaline solution tends to undergo oxidation on standing, with consequent increased toxicity; but this substance and its congeners vary considerably in the rapidity of oxidation, and in the degree of associated tox-



icity. The drug should be used reasonably promptly after preparation. If two or three hours' delay is unavoidable, the solution should be kept in a cylinder, full to the stopper, so that no air is present.

6. Several different types of reactive symptoms may occur after the use of salvarsan: (a) immediate; (b) early, and (c) delayed. The immediate symptoms are due to a paresis of the blood vessels; the early symptoms coming in a few hours after the injections are febrile and gastronomic; and the delayed symptoms may be referable to the brain, or the liver and gastro-intestinal tract.

7. There is no one cause of reaction. The etiological factors in the production of reactive phenomena may be related to (a) the patient, (b) the technic, and (c) the medicament. We believe that the most important factor in the causation of reactions is referable to the drug. We believe that the immediate vasoparetic reactive symptoms are due to traces of an unidentified impurity in the drug, which we have for convenience termed substance X. We are confident that these symptoms are not due to "arsenoxide."

8. Salvarsan and its congeners are not compounds of absolute chemical purity. We cannot, therefore, expect absolute constancy in biological effects.

9. Salvarsan and its congeners may vary, within certain limits, in therapeutic effect, and to a greater degree in toxicity. The ampoules obtainable in the open market exhibit striking variations in toxicity.

10. Even the poorest compounds, however, are tolerated by animals in much higher amounts than the maximum dose administered to man, so that there is nearly always a latitude of safety.

11. We believe that the commercial products should be tested intravenously as well as subcutaneously, and that they should be tolerated by rabbits in the dose of 60 mg. per kilo of body weight.

12. Salvarsan is a safer substance than mercury and can be tolerated intravenously by white rats in 50 times the dose of the latter, weight for weight.

**Radium in Lupus.**—Paul Haslund, first assistant in Finsen's Light Institute in Copenhagen, was to have delivered a lecture on this subject before the Scandinavian Dermatological Society in June, 1916. This lecture was never given, owing to the author's death just before the meeting, but has been printed, as written, in the *British Journal of Dermatology* for October-December, 1916. He refers to the enthusiasm for treatment by radium that had passed over large parts of Europe four years previously, which was shown to be unfounded more than ten years after the introduction of radio-active substances into therapeutics. It was, however, the cause of the Finsen Institute

purchasing a sufficient quantity of radium to enable them to make independent therapeutic observations. Although there has never been quite so high a degree of enthusiasm for radium in the treatment of lupus as in the case of malignant tumors, it has, nevertheless, been pronounced in some quarters. Danlos was the first to introduce this treatment in 1900, and the reports since then as to its value have been quite conflicting, and also as to the most effective way of administering it. Since it has been claimed that each apparatus has its peculiarities, that the power of resistance of the patient varies much, and that morbid tissues can stand much higher doses than healthy ones, Haslund considered that the whole system of treatment might be fairly termed at present a purely empirical one. In all, 31 cases of lupus vulgaris of the face were treated by radium as well as some with lupus of the mucous membranes. As to his results, he states that it is beyond doubt possible to obtain healing of the lupus foci, and consequently a permanent cure, in certain cases of limited extension, although even in this case one should be prepared for local relapses. In the majority of cases, however, the results were less favorable, for even if a definite improvement was shown in some cases, it was only after a long time, or was followed by retrogression or an absolute stand-still, so that it was thought necessary to substitute some other form of treatment. He considers that the cosmetic results are not so good after radium treatment as after the light and even x-ray treatment, owing to atrophy and telangiectasis that may ensue; and on the whole that the radium treatment is inferior to our other means of curing the disease.

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#### Book Review.

**Clinical Laboratory Technic for Nurses.** By ANNA L. GIBSON, R.N. Boston: Whitcomb and Barrows, 1916.

This manual by the assistant superintendent of the Huntington Hospital is not only most creditable to the author, but affords a distinct addition to the nurse's education, covering, as it does, a hitherto unoccupied field. It is well known that as technicians women frequently excel men in the laboratory work which is here described; and the mastery of this department is a valuable asset to a trained nurse who desires to fit herself as the assistant of the practising physician or surgeon.

## THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, JANUARY 3, 1918.

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## ORGANIC LESIONS IN SHELL SHOCK.

RECENT observations on the various fronts tend to show that shell shock is the expression of a cell-exhaustion of the central nervous system. It is generally accepted by neurologists that this exhaustion is accompanied by pathological lesions of the cytoplasm. It is, perhaps, doubtful whether this change is inviolable, and the laws governing it are still very imperfectly known, but, as a broad fact, it is certainly true. Such lesions may be divided into two main groups. First, those which are visible after proper staining of some particular cells or substance of the brain. These have been observed recently, and they seem to lie at the root of fatal cases of shell shock. Secondly, those which connote a diminished potentiality for the development of nerve force of such a nature as to impair the value of the cell. These are types of degeneracy which appear in spite of a satisfactory military training and environ-

ment. It is this latter class that alienists like Sir George Savage and Sir Robert Jones have described in the *Journal of Mental Science*. These authors seem to understand by the disposition to shell shock a marked falling away, mentally, morally, and physically, from the average condition of the soldier or race. Thus, among British soldiers, the habitual criminal and the morally perverse, the mentally unstable and insane, the physically weak and ill-developed are often spoken of as predisposed to shell shock. But there are also cases in which it occurs, in spite of hygienic surroundings, the best heredity, and the most careful education. It follows that shock or fear or the dread of the "unknown," of sufficient severity to overwhelm the will, may cause in healthy men the whole syndrome of the affection—the unconsciousness, aphasia, abasia, and pseudo-paraplegia. It is shown by Nissl and by Nonne that the power to resist the highest degree of fear, as in drumfire, explosion of mine craters, etc., necessitates the presence of the maximum nervous potentiality plus an optimum constitution. This is the meaning of Dr. Mott's phrase that many cases of shell shock are the neuro-potentially unfit.

There are three chief views as to the causation, which have been fully discussed by Wollenberg (*Archiv für Psychiatrie*, 1916, p. 335), and more recently by two Italian neurologists. Lattes and Gorla (*Archivio di Antropologia Criminale*, April, 1917). The first is, that shell shock is not the expression of a pathological cell change, but the sign of a defect which exists in certain strains or stocks, and which most writers describe as psychoneurosis, hysteria, suggestibility, and degeneracy. On this view it is presumed that the innate nerve potentiality has been impaired by congenital or acquired hysteria and neurasthenia; it includes, besides, the types of degeneracy as seen in idiots, epileptics, and paranoiacs. In modern armies these groups are found, which obviously shows the importance of a minute family and individual history in the examination of soldiers. The second view is that the syndrome of shell shock is not the result of defects or atavistic causes, but arises of itself; in other words, it is psychogenic. Most writers agree that these cases—the functional, emotional, the hysterical in the usual sense—are the most numerous. As Wollenberg says: "In the bulk of the cases of shell shock (Granatkontusion) the emotional factor far outweighs the commotional." Dr. Mott and other British au-

thorities take this view, but they have considerably narrowed the definition of hysteria.

The third classification is that the causes of shell shock—whether they have existed *ab initio* in the soldier's nervous system or whether they are psychogenic in origin—are physical processes, organic lesions, produced by the effects of long exposure to the gases, and other results of the bursting of powerful shells. In this place reference may be made to a recent work by Homburger (*Die körperlichen Erscheinungen der Kriegshysterie*). This author looks upon the question in a twofold way: either the idea of pure hysteria must be abandoned, or this form of hysteria must be sharply differentiated from hysteria with organic lesions. Most neurologists at the front find it exceedingly difficult to believe in traumatic hysteria (Oppenheim's) or molecular shock (Charcot's). Actual observers found that of 74 men examined after an artillery attack, 67 showed unmistakable signs of localized organic lesions of the central nervous system.

These lesions have now been studied post mortem by Dr. Mott and Captain Hurst. They, as well as French, Italian and Russian neurologists, have observed: (a) early generalized chromatolytic changes in the cells of the central nervous system, (b) disappearance of the basophile substances (c) extravasation of blood into the substance of the brain, (d) punctate hemorrhages with congestion of the meninges, (e) minute hemorrhages and changes due to the effects of compression and decompression, that is to say, as in caisson disease, with cerebrospinal fluid under high pressure, albumin, blood, and excess of lymphocytes. It has been noticed by several observers that the clinical signs are those of organic changes; and Homburger, Mörchner, and Nissl believe that the war has altered our conceptions of hysteria though it has produced no new type. Nissl, in particular, appears to question the existence of the "hysterical personality." Shell shock is that condition of nervousness which results from the exhaustion of the inherent vitality of the cells. They are unable to function because they have come to the end of their physiological banking account. In fact, to Nissl most cases are due to a completely human and normal weakness, and the organic lesions, it might be added, are equally likely to be due to the action of inorganic poisons, as gas, and physical agents, concussion and commotion.

## PUBLIC HEALTH VALUE OF UNIVERSAL PHYSICAL EXAMINATIONS.

FROM time to time it has been urged that all individuals submit periodically to physical examination in order that disease may be detected and that in this way the standard of health of the community and of the people be raised. In justification of this most radical procedure, the claim that about 80% of the people are suffering from one form of disease or another is advanced. The large number of rejections for physical causes in the draft is also pointed to as an argument in favor of this examination. For this large percentage of sickness there is, however, no statistical or other foundation, even if all minor ailments to which man may temporarily be subject, be included. From the draft standpoint it must be remembered that most of the rejections were for physical inadaptability to this form of vocation,—the military vocation. This rejection in no wise reflects upon the general health or fitness for other useful or necessary vocations. And, indeed, the modern tendency is to reject no one except for tangible disease, but to fit everyone for even a military vocation which he is able to do. The time is past when the bogey of disease must be used upon intelligent individuals in order to force them to attend to ordinary health and sanitary precautions. The general health of the public does not depend so much upon individual endeavor to perfect one's own body as it does upon the health activity of a particular community in closing the large and patent avenues of danger to health, such as in respect to food, active contagion, dangerous industries, general sanitation, protection of the young, etc. When a community gives these matters the maximum attention of which it is capable there is little need of this sort of individual anticipatory attention to possible disease. That health is purchasable by a community is more than ever true. Moreover, it is very much of a question whether it is advisable to increase the tendency in some people to hypochondria and other forms of physical introspection with these examinations, for the advantage that might be gained through the detection of disease not otherwise suspected. There is already too much attention paid to the purely physical, and too little to the mental, ethical and spiritual phases of life. A decent regard for the health, cleanliness and general well-being of the body is absolutely nec-

essary, but to deify it or to make it the main consideration of life, with the fear for its safety that it engenders, is unworthy of the times. Besides, it is illogical to examine the body periodically without giving parallel attention to the mind, since they are very often dependent upon each other; yet to advocate the periodic examination of the mind of all people would appear absurd to those who advocate the examination of body. It is hoped that the periodic examinations would detect most cases of tuberculosis and thus prevent its spread. The few active cases not under surveillance would not be worth the trouble of detecting them.

Furthermore, these examinations would soon be looked upon as guarantees of good health made by the medical examiner, and contrary eventualities would react unfavorably upon the ability and integrity of the whole profession. It would defeat its own purpose because it would vitiate the value to the laity of future examinations. There is no doubt that in civilized communities most of the active cases of illness are being looked after. The occult cases or the cases that are rather potential than active, are very hard to detect, even when the individual presents himself for examination for cause. Diagnosis is not a question of examination and then diagnosis. For the good of all, the laity must be disabused of this false notion. Examinations on the scale proposed would tend the more to encourage this notion. The idea of periodic physical examinations of certain individuals or classes is, however, a good one. Frequent examinations of the inmates of institutions, schools, factories and the like by their own medical officers is valuable and feasible because of the community of interest in all the individuals concerned. From the same standpoint, the examination by life insurance companies of their policy holders is good. It is to their material interest that their insured maintain life and health. The value of these latter examinations lies particularly in the fact that they are made by medical officers concerned only with a particular class, but does not apply to the physician at large, who must be occupied with the tangible ills of a community. At the present time medical men will be scarcer and scarcer as they are needed for war work. Those remaining will be quite busy with more pressing needs, and will have little time to officiate in the medical examination arenas. It is much better to concentrate with the proper health

authorities the supervision of the community's health and allow them to urge proper living as a means of conserving the health of the individual. Much as the propagandum for this sort of examination maintains to the contrary, the health and the well-being of the community and the individual are good. Statements to the contrary are libels, no matter what the source or the motive.

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### EVERY DOCTOR IN THE MEDICAL RESERVE CORPS.

WHAT an ideal situation it would be if every doctor in the United States who is mentally, physically and morally fit, were in this Corps. The time is coming, and in the immediate future, when the Medical Reserve Corps of the army must be immensely augmented; and to enable the Surgeon-General to have at his command for immediate assignment, as conditions demand, a sufficient number of trained medical officers, let us take the above thought seriously. We all know, from past history, the conserving value of an efficient medical corps, and this means number as well as training. A statement made by one high in authority in the Surgeon-General's office, "that our fighting forces would be disseminated by sickness and casualties in six months were it not for an efficient Army Medical Corps," clearly emphasizes the importance of every doctor in the United States, meeting the requirements above referred to, accepting a commission in the Medical Reserve Corps of the United States Army.

The struggle in which we are now engaged, and for which we are preparing to take such a prominent part, depends for its success as much upon the medical profession as it does upon our combatant forces, and while we do not know that any such intention as herein suggested is in the mind of the Surgeon-General, it would at least give him the necessary corps of medical officers upon which to draw, and thus serve the best interests of our country, and the best interests of the medical officer serving.

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DEATHS AMONG TROOPS IN FRANCE.—On December 20, General Pershing reported four deaths among privates—one from measles, one from meningitis, and two from pneumonia.

## MEDICAL NOTES.

**PHOTOCHEMISTRY.**—A prize of one hundred dollars is offered for the best research work upon photochemistry in its broadest aspect, done at the Harvard Medical School during the Academic year 1917-18. This prize is open to any research worker at the school. Papers submitted in competition must be in the hands of the committee not later than September 1, 1918, and should be forwarded to the chairman, Dr. Otto Folin, Harvard Medical School, Boston. The committee on the award consists of the head, or acting heads, of the departments of bio-chemistry, physiology and bacteriology of the Harvard Medical School. Papers must be typewritten, and should consist mainly of the results of unpublished original work.

**HOSPITAL BEQUEST.**—By the will of the late Mrs. Martha A. Cummings of Brookline, the Rhode Island Hospital at Providence is to receive a bequest of \$8000; one-half of this sum is to establish a free bed, to be known as the Silas William Cummings bed, in memory of Mrs. Cummings' husband, and the other half to bear her own name.

**WEEKLY REPORT OF HEALTH IN TRAINING CAMPS.**—The report for the week ended December 14 showed that the health in camps of the National Guard divisions had improved, and that in the National Army camps had not improved.

Deaths for the week in the Guard division totalled 165, as against 190 the week previous, and those in the National Army 97, against 74 the week before. Of the Guardsmen dying, 143 succumbed to pneumonia and 12 to meningitis. In the National Army there were 69 deaths from pneumonia and 18 from meningitis.

There was a decrease of 128 cases of pneumonia in the Guard camps, the total for the week being 294, as against 423 the week previous. Cases of measles decreased from 2633 the previous week to 1058, and meningitis from 42 to 30.

In the National Army there was an increase of 124 cases of pneumonia, with 294 this week against 170 the week before. There were 2251 cases of measles this week, against 1369 the previous week, while meningitis cases were 61, against 35 last week.

**MILITARY HOSPITAL IN BOSTON.**—Under the direction of Lieut.-Col. William A. Brooks of the Massachusetts State Guard an emergency hospital of about 450 beds will be made to occupy the artillery drill shed of the Commonwealth Armory. The hospital will consist of twenty-two wards of twenty beds each, with a sterilizing plant, operating room and dressing stations. It will be under the supervision of the medical division of the Massachusetts State

Guard, which will furnish the entire medical and surgical personnel of the staff, and will be available for use in the event of a disaster such as befell Halifax.

**PROMOTION OF SURGEONS TO REAR ADMIRALS.**—The President has selected Medical Directors George H. Barber and Edward R. Stitt to be promoted to the rank of rear admirals. Dr. Barber is a native of Massachusetts, and has been for several years director of the Naval Hospital at Las Animas, Col. Dr. Stitt is president of the Naval School, Washington, and an authority on tropical medicine.

## WAR NOTES.

**SANITARY CONDITIONS AT WAR CAMPS.**—Surgeon-General Gorgas, in making his report of conditions at the army cantonments where epidemics are rife, stated that insufficient clothing, overcrowding and bad sanitary conditions are largely responsible for disease prevalence. With the exception of Camp Funston at Kansas none of the camp base hospitals have been completed, the work of the medical officers being thereby much handicapped.

“Gen. Gorgas recommends observation camps, the relieving of overcrowded conditions, the oiling of nearby roads to keep down the dust, and the erection and heating of ambulance sheds to obviate the present difficulties found in getting the motor ambulances started during the cold weather, because of the freezing of the water in the radiators.

At Camp Bowie, where the 36th Guard division is training, General Gorgas reported 41 deaths during the past month from pneumonia out of 409 cases admitted to the hospital. About 2900 cases of measles have developed in the same length of time.

At Camp Funston, in the 89th National Army division, there have been 43 deaths from pneumonia with 189 cases, 22 from meningitis with 70 cases.

“This indicates the most serious condition as far as infection from meningitis and pneumonia is concerned,” Gen. Gorgas says. “As emphasizing the situation, I call attention to the fact that they had 84 deaths from all causes when the normal death rate of such a command should be about 12.”

The General reports that among the 36,000 drafted men injected in the cantonment in October were many meningitis carriers, this part of the country being known, he says, to all health officers as having been for several years the principal epidemic center in the civil population for meningitis.

Sanitary conditions at Camp Sevier, in the 13th Guard division, are described by General Gorgas as serious. Sixty men have died of pneumonia in the past month, and the camp has been exposed to a general epidemic of measles, about 2000 cases having occurred. During the

month there have been 175 cases of pneumonia and 15 cases of meningitis.

The basic cause of unsanitary conditions, the report continues, is overcrowding as the result of the shortage of tentage. From 11 to 12 men had to be put into each tent with about 20 square feet to each man. General Gorgas recommends that no additional men be sent to this camp until the division commander says he is able to care for them in the proper manner.

During the past month at Camp Doniphan, where the 35th Guard division is training, there have been 74 admissions from pneumonia with 11 deaths; 316 cases of measles and 1 death; 104 of diphtheria with 1 death; and 6 of meningitis, with 4 deaths. Overcrowding is described by the report as the basic cause.

**WAR RELIEF FUNDS.**—On Dec. 30, the totals of the principal New England war relief funds reached the following amounts:

French Wounded Fund .....	\$305,701.62
Armenian-Syrian Fund .....	273,741.33
French Orphanage Fund .....	136,246.34
Serbian Fund .....	125,725.42
Italian Fund .....	108,216.21
Polish Fund .....	94,682.73
LaFayette Fund .....	34,097.28
War Dogs' Fund .....	2,393.53

#### BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending Dec. 22, 1917, the number of deaths reported was 235, against 239 last year, with a rate of 15.86, against 16.39 last year. There were 34 deaths under one year of age, against 35 last year.

The number of cases of principal reportable diseases were: diphtheria, 119; scarlet fever, 47; measles, 85; whooping cough, 42; typhoid fever, 3; tuberculosis, 48.

Included in the above were the following cases of non-residents: diphtheria, 10; scarlet fever, 7; measles, 2.

Total deaths from these diseases were: diphtheria, 5; measles, 2; whooping cough, 2; typhoid fever, 1; tuberculosis, 22.

Included in the above were the following non-residents: diphtheria, 1; measles, 1; tuberculosis, 1.

**BOSTON CITY HOSPITAL CONTAGIOUS WARDS.**—At the opening of the new City Hospital West Department in West Roxbury, recently, Mr. Shuman, president of the Board of Trustees, gave the following interesting account of the development of the City Hospital in its care of contagious diseases.

"On Aug. 31, 1895, the South Department for communicable diseases was opened, marking a new era in hospital administration, as this was the first hospital for such diseases in this country. Before that time, scarlet fever, diphtheria and measles were admitted into general hospitals and more or less isolated in rooms and wards

therein. The trustees of the hospital at that time recognized this as a very great menace to the hospital and to the community, although they had set aside two wards—old A and E—for that purpose.

During the 22 years that the South Department has been open very valuable work has been carried on here. The value of antitoxin was early recognized by Dr. McCollom, and he was the first man to use mammoth doses of antitoxin, now universally used throughout the world. The result of this treatment is shown by the fact that before the use of antitoxin the mortality from diphtheria was 48 per cent., and last year's record shows that it has been reduced to 7 per cent. Equally valuable has been Dr. Mallory's research work in scarlet fever, during which he discovered the bacillus.

Several years ago, during Mayor Fitzgerald's administration, the trustees realized that the South Department had outgrown itself, and requested an appropriation from the Mayor and City Council to build new wards on the corner of Harrison avenue and Northampton street. An appropriation of \$298,000 was granted for this purpose. Later, when the Parental School was abolished, the City Government transferred the buildings and grounds thereof to the hospital department in connection with the South Department, and the above-named appropriation, to the amount of \$200,000, was transferred to this new branch of the hospital, which is known as the West Department. The result is before you in the remodeling and connecting corridors of the different buildings, made suitable for hospital purposes.

For the past few years it has been necessary to request from the Health Department the use of the Southampton wards for the overflow of scarlet fever and diphtheria from the South Department. A short time ago the trustees, knowing that they were rapidly nearing the time when they would have to take care of the overflow, and because of the fact that several cases of smallpox were housed at the Southampton wards, realized that they must immediately open the diphtheria and whooping cough wards of the West Department. The rest of the buildings, it is hoped, will be ready for occupancy within the next two months. They would have been completed before now but for the delay incident to such alterations and building.

The West Department again marks a new era in hospital administration, for the ward that has been set aside solely for whooping cough is the first distinctly whooping cough ward opened in the country.

It is a source of pride and gratification that the city of Boston takes better care of its afflicted citizens than any other city in the United States. Its hospital doors are wide open at all times for all who are entitled to treatment therein. The City Government has always been generous and liberal toward its City Hospital

and this has enabled the trustees to keep abreast with the times and put the institution on the plane of highest efficiency for the welfare of the people."

**HOSPITAL BEQUEST.**—By the will of the late Mrs. Dorcas C. True of Malden, Mass., the Malden Hospital receives a gift of \$1000.

**CITY HOSPITAL TRUSTEE.**—Dr. John P. Toomey of Roxbury has been appointed trustee of the Boston City Hospital to fill the vacancy left by the recent death of Conrad J. Rueter. Dr. Toomey is a graduate of Harvard Medical School.

## Obituary.

### PROFESSOR THEODOR KOCHER.

THE death of Professor Theodor Kocher in Berne, Switzerland, marked the end of a long and famous career of one of the pioneers of surgery. Professor Kocher was born in Berne on August 25, 1841, and after his student days there, spent some time in Berlin, London, Paris and Vienna, where he was a pupil of Billroth's. He graduated at Berne in 1865, was called to the chair of clinical surgery in the University of Berne in 1872, and for forty-five years was head of the university surgical clinic there. In a recent number of the *British Medical Journal*, Sir Berkeley Moynihan gives the following appreciation of Kocher's work and influence:

"With the death of Kocher the world loses its greatest surgeon. He lived a long life of unceasing industry, he covered a wider range of subjects than any living surgeon, and all his work was marked by clear insight, profound thought, accurate and well-ordered statement, and wise judgment.

From his earliest days he was a sound anatomist. The first of his contributions to surgery to attract attention was that in which he worked out the method now known by his name for the reduction of a dislocated shoulder. On one memorable occasion, when he sat among the audience in Billroth's theatre, a case of old unreduced subcoracoid dislocation of the shoulder was brought in. Every method of reduction was tried and failed, and efforts were at last abandoned, when Kocher, who had just perfected his own procedure, asked to be allowed to try it. Billroth consented and the shoulder was at once replaced. Kocher, being asked, went on to describe the usual position of the rent in the joint capsule, the direction of movement of the head of the humerus as it escaped from the joint, and the final positions in which it might lie. He then showed why the manipulations which he proposed were sure to

succeed if duly carried out, in the ordinary case.

Throughout a long life Kocher's devotion to anatomy and his operative work on the cadaver were unceasing. There were few days, in summer or winter session, when he did not visit the post-mortem room to demonstrate an old operation or try a new one. His book on operative surgery gives plain evidence throughout of his easy familiarity with the anatomy of every part.

Quite early in his career he realized the truth and the vast scope of Lister's teaching. In 1875, or earlier, he introduced the operation for carcinoma of the tongue, in which, for the first time in an operation upon the mouth, a strict attention to antiseptic principles was made essential. In later years Kocher himself abandoned this method in advanced cases for that which generally bears the name of Syme. His freedom from prejudice for his own intellectual progeny was shown also in his frequent choice of other methods than his own for the radical cure of hernia. The method he devised was excellent, and indeed, when first introduced, was almost universally acclaimed as the best; yet many surgeons who visited him saw Bassini's method practised more often than his own.

Kocher's name throughout the world was perhaps chiefly associated with his work on the thyroid gland. His contributions to our knowledge of the diseases of this gland and their treatment are, of course, unrivalled, and he has probably left little or nothing for anyone else to say. His operations numbered many thousands, and as occasions for a scrupulous and minutely careful technical display they were unsurpassed; every tiniest detail was arranged, every difficulty most gently overcome; there was no haste, no untidiness, no shedding of one drop of blood that could be spared. Infinite accuracy, infinite care, infinite patience, gave him results as near to absolute perfection as it is possible for surgery to go. As one retraced, in afterthought, every stage in a difficult and tedious, and perhaps prolonged operation, it seemed impossible to find a fault or to discover where anything could go wrong. From the treatment of the simple cumbersome tumors of the thyroid he was led to the study of Graves' disease, and was the first to urge, and with increasing success to practise, the surgical treatment of this condition. No one who saw him operate in a case of severe Graves' disease would ever forget his tender care, his exquisitely gentle touch, and the deft, light movement of every finger. When everything was finished, the stainless towels round the wound failed to reveal the fact that an operation had taken place. Such an operation—indeed, every operation Kocher ever did—was a supreme exhibition of what perfect anatomical knowledge, a blameless aseptic conscience, the most practised technical efficiency, unfaltering courage, unruffled calm, and the most exquisite gentle-



ness could accomplish. Many of the great surgeons of today will frankly admit that in all these things Kocher taught them more than any other man. He was a slow operator, but there was never a moment wasted. To do an operation as he thought it ought to be done, time was necessary. Those who were privileged to see his patients, in his private clinic or in the public hospital, will agree that no patient suffered from such an expenditure of time as Kocher found necessary. His whole work demonstrated the folly of those who operate with the single desire for speed. His method was the perfect one. He never wasted an instant; he never had to hurry; everything fell out according to plan, and the most sensitive tissue could hardly have been conscious of anything but a caress.

His literary work was amazing in quantity and in its high value. He published many years ago his work on diseases of the male generative system, which younger surgeons have too soon and too easily forgotten. His books on diseases of the spinal cord and on cerebral compression displayed his capacity for the most labored inquiry into the details of difficult problems or cases and for original experimental work of the highest order.

His work in almost any department of surgery would alone have made him a reputation as a surgeon of great gifts. He devised methods, whether entirely new, or wise, sound and timely modifications of older methods, with amazing fertility, for operations upon the lungs, the stomach, the gall-bladder, the intestine, upon hernia, upon cranial nerves, and so on. He invented instruments and appliances innumerable—tables, scissors, clips, clamps, screens, and towels. These were mere incidents in his daily work. Every artist must have the right instruments for his handicraft. Kocher's new methods, practised for new conditions, required new implements, and he was not slow to design them.

As a teacher he was greatly painstaking, diligent, and earnest. For two hours, 8 to 10 a.m., in the sessions he would teach in the theatre. Cases were brought in, examined and discussed. Some skill as an artist helped Kocher to make his teaching easy to acquire. He was never impatient with an honest, if stupid, effort; his voice grew high pitched and querulous when a student would try to deceive him with a clumsy bluff.

His life was one of unceasing activity. He began work early, teaching and operating at the hospital nearly every morning, and occupying the afternoons either in his private clinic, or in his study, going with great labor through the careful records of his cases.

What is the chief legacy a surgeon leaves behind him? Personal reputation, however exalted, is soon forgotten, and the name of a distinguished surgeon may not be long remembered even in his own country. Books which at the

time of their appearance are striking in new thoughts, or in the fresh presentation of old ones, cease soon to be read. Even in the long survivors, new editions change not only their contents, but perhaps the title also. The spoken word, whether by the bedside or in the theatre, is apt to slip from the memory or to be imperfectly recalled. A few characteristic sayings may chance to be handed down, but their authorship is soon lost. Wealth is, of course, rarely attained by any member of our profession, and for itself has happily no value among us.

The chief legacy which a surgeon can bequeath is a gift of the spirit. To inspire many successors with a firm belief in the high destiny of our calling, and with a confident and unwavering intention both to search out the secrets of medicine in her innermost recesses, and to practise the knowledge so acquired with lofty purpose, high ideals and generous heart, for the benefit of humanity—that is the best that a man can transmit.

Though Kocher trained no great men in his own school, as Billroth did, there are surgeons all over the earth who can say that in larger or smaller measure it is their pride to claim some humble share in this great inheritance, which Kocher, above all others, has nobly bequeathed to them."

A more intimate account of Professor Kocher is given by Lieut.-Colonel Lynn Thomas, C.B., C.M.G.

"By the death of Professor Kocher, one of the outstanding modern masters of surgery has been removed. He was undoubtedly one of the great makers of surgery of the nineteenth and twentieth centuries. I had the great privilege of knowing him for over twenty years, and during a visit he paid Cardiff and South Wales I had the opportunity of realizing how many interests he had in life apart from that of surgery.

As a surgeon he was unsurpassed in the observance of detail in technic, and during the many visits I paid to his operation theatres at the Inselspital and his private hospital I never saw a single occasion upon which one could criticize adversely, or went away with a feeling that somebody else who had specialized in departmental work could have done the work he had in hand in a more masterly fashion. I have seen surgeons on the Continent and in America who could operate with more speed, but I have never seen one whose judgment was so sound in the performance of daring operations where risk to life arose. He had one speed, which I designated the 'Kocher speed': it was uniform whether he performed the simplest or the most complex operation, either upon the extremities, the abdomen, the neck, or the brain. There is hardly a branch of modern surgery in which he has not left a valuable and permanent impress, but his name will always be connected with a revolution in the treatment of goiters,



and as an illustration of the amount of work he did in this department alone I may quote from a letter I received from his son, Albert Kocher, dated March 12, 1912, the following sentence, 'My father yesterday performed his fifth thousandth goiter operation.'

I have never seen him use spectacles for operations, and in talking this matter over he said that Nature had been very good to him in giving him two eyes, the one for the enthusiasm of early age, and the other for the maturity of vigorous but advancing years. He had an extraordinary energy for work, and I have seen him working from 8 o'clock in the morning until 1 o'clock at the Inselspital, then in the afternoon perform three thyroidectomies for Graves' disease (upon a Russian, a German, and an American) at his private hospital, and afterwards pay visits and hold consultations, and turn up at 8 o'clock in the evening to dinner without any appearance of fatigue. He had an old-world courtesy, and in his home circle was always affectionate, pleasant, and humorous. The last occasion on which I visited Berne was in June, 1914, and at that time he was as alert and as keen in his work as he was the first day I met him.

Surgery all over the world has lost a great figure by the death of Professor Kocher, and it is pleasant to record that in his own native town so dear to him and Mrs. Kocher, his genius was long ago recognized; one of its main streets is designated by his illustrious name."

#### FRANK WENTWORTH PLUMMER, M.D.

DR. FRANK WENTWORTH PLUMMER died of erysipelas and broncho-pneumonia at his home in Malden, December 15, 1917, at the age of 47.

Dr. Plummer was born in Portsmouth, N. H., February 20, 1870, and was the son of Selwin B. and Sarah (Wentworth) Plummer. When he was three years old his parents removed to Charlestown, and soon afterward to Malden, where most of Dr. Plummer's life has been spent. He was a graduate of the Malden grammar and high schools and of Dartmouth with the class of 1891. He then went to the Harvard Medical School, where he was graduated in 1895, as he was from the Worcester City Hospital in 1896. Since that time he had been active in practice in Malden.

He had served there as chairman of the board of medical inspectors of the public schools, and he was a member of Converse Lodge of Masons and various branches of that order, as well as the Odd Fellows, the Malden Medical Society, Middlesex South District Medical Society, of which he was treasurer, and of the American Medical Association. He was a member of the Center Methodist Church.

On Feb. 12, 1903, Dr. Plummer married Deb-

orah Allen Wiggin, daughter of the late Judge Wiggin of Malden. Dr. Plummer's wife and four children, two boys and two girls, survive him, as does a brother.

#### CHARLES GREENLEAF CARLETON, M.D.

DR. CHARLES GREENLEAF CARLETON was born at Haverhill, November 1, 1843, and died at Lawrence, December 17, 1917, at the age of 74. He was a son of Colonel Samuel and Sarah (Clarke) Carleton, and studied medicine at the Harvard Medical School. He was at the school only a year when he enlisted as a medical cadet and subsequently was made an assistant surgeon in the army, serving in that capacity until the close of the Civil War. He then returned to the Harvard Medical School, and was graduated in the class of '67. He thereafter made his home in Lawrence.

Dr. Carleton had been for many years, and up to the time of his death, the president of the medical staff of the Lawrence General Hospital, was city physician in 1895-96, consulting physician at the Danvers Insane Hospital from 1881 to 1907, a member of the Massachusetts Medical Society, and president of the Essex North Medical Society in 1889 and 1890. One of his sons is Lieutenant Francis Cogswell Carleton of the United States Field Artillery, stationed at Camp Stanley, Texas. Recently Dr. Carleton had been active in arranging a patriotic meeting for the physicians of Lawrence. He was also a member of Needham Post, No. 39, G.A.R., and was chairman of the board of deacons of the Trinity Congregational Church, Lawrence.

In August of last year the physicians and surgeons of Lawrence and vicinity gave him a complimentary dinner on the completion of fifty years' active practice in Lawrence. He is survived by his widow and four children.

#### FRANKLIN PAINE MALL, M.D.

THE recent death of DR. FRANKLIN PAINE MALL of Johns Hopkins University was a sad loss to anatomical science in this country. Dr. Mall was born in 1862 and received his degree of M.D. from the University of Michigan. The *British Medical Journal* pays the following tribute to his work:

"He performed two great works for the profession in the United States—he introduced new methods of teaching anatomy, and he created a school which has had, through its pupils, a widespread influence. The opening of his laboratory at the Johns Hopkins University in 1893 marks the beginning of an era for the subject in the medical schools of America. Bowditch in Boston, and Newell Martin in Baltimore, with well-

equipped laboratories and new methods, had laid the foundation of the modern and flourishing American school of physiology, but anatomy was still a handmaid of surgery and of medicine, and taught in old-time dissecting rooms and in the old way. Mall changed this and made the anatomical laboratory of the medical school a workshop for teaching, training, and investigation. With the true Hunterian spirit he had little faith in lectures, but immense faith in steady, continuous concentration in practical work. 'The aim,' as he said, 'is to make the course one continuous problem for each student to investigate, aiding each one with good material, and teaching him how to study.' More stress was laid on origin and function than on the acquisition of the dry details of anatomy. The experimental, investigating spirit was too strong in the laboratory to allow any but the weakest men to worry over the minutiae, and a man's examination was largely the weekly report on the character of his work. Inferior students were mercilessly asked to go elsewhere. The best men in the school were attracted to Mall by the quiet helpful way in which they were taught how to work. His own investigations cover a wide field, and with an unequalled technic for modelling and reconstruction his papers were works of art. The *American Journal of Anatomy*, the *Anatomical Record*, and the *Journal of Morphology* testify to the zeal and ability of his pupils. To few men is it given to revolutionize completely the method of teaching and investigating a subject. This Mall did for anatomy in the United States."

### Miscellany.

### FREE PUBLIC LECTURES ON MEDICAL SUBJECTS.

THE Faculty of Medicine of Harvard University offers a course of free public lectures on medical subjects to be given at the Medical School, Longwood Avenue, Boston, on Sunday afternoons, beginning January 6 and ending April 21, 1918. The lectures will begin at four o'clock and the doors will be closed at five minutes past the hour. No tickets are required.

- Jan. 6. Dr. William F. Snow, Major, Med. Reserve Corps, U. S. A., "Social Hygiene and War."
- Jan. 13. Dr. W. T. Porter, "Surgical Shock."
- Jan. 20. Dr. G. H. Wright, "Teeth and Their Relation to Human Afflictions; A Plea for Conservation."
- Jan. 27. Miss Elizabeth Sullivan, "Home Nursing," with demonstrations.
- Feb. 3. Dr. Richard M. Smith, "Child Welfare During the War."
- Feb. 10. Miss Mary Beard, "Child Welfare."
- Feb. 17. Dr. E. H. Bradford, "Shoes and Structure of the Foot."

- Feb. 24. Bishop Lawrence, "Social Infection and the Community."
- March 3. Dr. L. W. Baker, "The Deformed Mouth of a Child; its Effect on the Child's Future."
- March 10. Dr. L. J. Henderson, "Food: How to Save It."
- March 17. Dr. F. W. White, "What to Eat during War."
- March 24. Dr. Percy G. Stiles, "Some Aspects of Fatigue."
- March 31. Dr. Glenn I. Jones, Major, Med. Corps, U. S. A., "Camp Sanitation and Control, and Hospital Administration at Camp Devens."
- April 7. Dr. J. Baptist Blake, "Accidents and Injury, First-Aid" (with simple demonstrations).
- April 14. Dr. E. H. Place, "Immunity to Contagious Disease."
- April 21. Dr. I. Chandler Walker, "Hay Fever and Asthma."
- April 28. Dr. Julius Levy (under The National Food Committee), "Food Administration during the War."

Copies of this announcement and further information in regard to any of the lectures may be obtained by addressing The Chairman of the Committee on Public Lectures, The Harvard Medical School, 240 Longwood Avenue, Boston, Mass.

### SOCIETY NOTICE.

THE MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS—A meeting will be held at the Copley-Plaza Hotel on Jan. 8, 1918.

#### SUBJECTS

Medical Administration of Workmen's Compensation Insurance. Dr. George E. Tucker of California National Industrial Board.  
Emergency Hospital Exemplified by the Halifax Disaster. Dr. Harold Giddings of Boston.  
Dinner at 6.30.  
Members of the profession cordially invited.

J. H. STEVENS, *Secretary*.

### NOTICES.

MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE.—Annual Conference to be held at Lorimer Hall (Tremont Temple) Boston, Wednesday, Jan. 9, 1918.

Afternoon Session, 3 P.M.—THE DEFECTIVE DELINQUENT AND THE WAR. (1) Nervous and Mental Breakdown from War Strain and Shock, Capt. John T. MacCurdy, M.O.R.C., New York; (2) What Canada is Doing for her Soldiers who Return with "Shell Shock," Dr. F. H. Sexton, Vocational Officer, Military Hospitals Commission, Canada; (3) What this Country is Doing to Keep from its Armies the Nervously and Mentally Unfit and Adequately to Care for those who become Disabled by the Shocks and Strains of War, Dr. Frankwood E. Williams, Associate Medical Director, National Committee for Mental Hygiene, New York City. (Moving pictures of groups of "Shell Shock" cases will be shown.)

Evening Session, 8 P.M.—THE DEFECTIVE DELINQUENT. (1) The Relation of Mental Defect and Disorders to Delinquency, Dr. Victor V. Anderson, Medical Director, Medical Service of the Municipal Court, Boston, Dr. William Healey, Director, Judge Baker Foundation, Boston; (2) The Defective Delinquent in Court, Justice Frederick P. Cabot, Juvenile Court, Boston; (3) The Probation Problem of the Defective Delinquent, Herbert O. Parsons, Deputy Commissioner of Probation, Boston; (4) What Shall be done with the Defective Delinquent in the Penal Institutions? Col. Cyrus B. Adams, Director of Prisons, Boston, Mrs. Jessie D. Hodder, Superintendent, Reformatory for Women, Sherborn; (5) What Should be the Attitude of the Alienist toward the Defective Delinquent? Dr. George M. Kline, Director, Commission on Mental Diseases, Boston; (6) A Practical Program for Dealing with the Defective Delinquent, Representative B. L. Young, Weston.

BOSTON MEDICAL LIBRARY.—The Annual Meeting of the Boston Medical Library will be held in Sprague Hall on Tuesday, Jan. 8, 1918, at 8.15 P.M. Dr. E. A. Crockett will give a talk entitled "Observations of a Red Cross Officer in Europe."

WALTER L. BURRAGE, M.D., *Secretary*.

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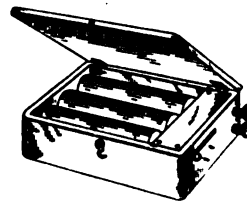
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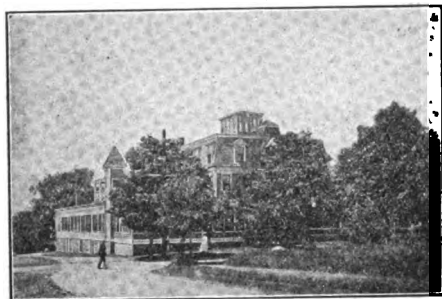
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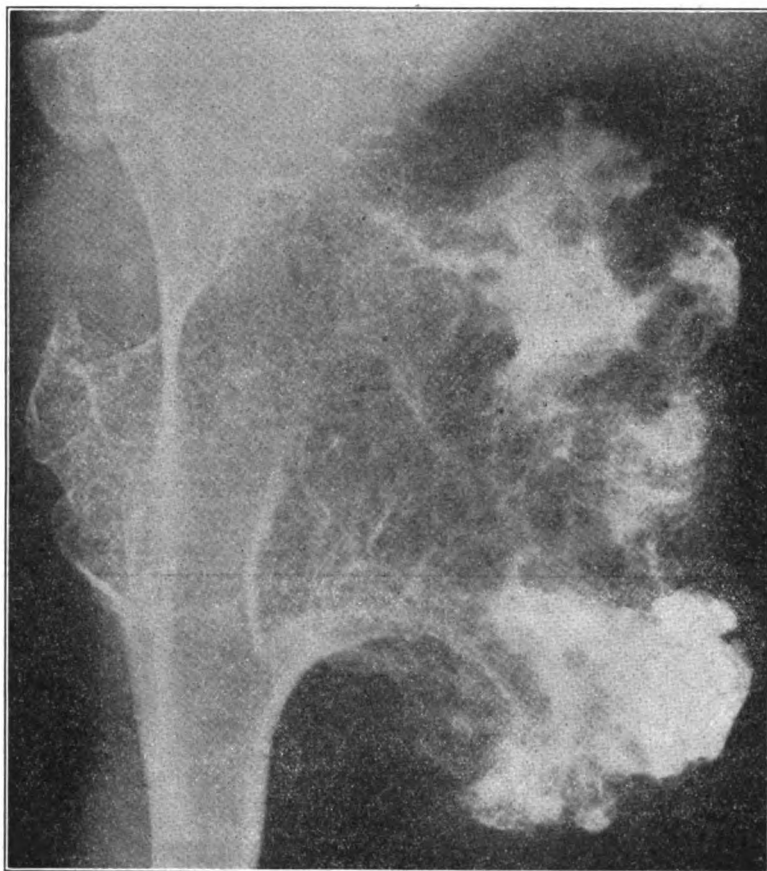
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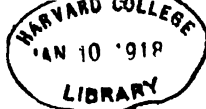
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No. 2

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## CONTENTS

### ORIGINAL ARTICLES

- THE EXAMINATION OF SOLDIERS FOR TUBERCULOSIS IN THE U. S. ARMY. *By Edward O. Otis, M.D., Boston*  
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 MEMBRANOUS CROUP. *By D. M. Lewis, M.D., New Haven, Conn.*  
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 LIPIDS IN 131 DIABETIC BLOODS. *By Horace Gray, Boston*

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 STANDARDIZATION OF SCHOOL HYGIENE.  
 THE LIMIT OF RECOVERY IN HEMIPLEGIA.  
 INDIVIDUAL INCOME TAX RETURNS.

For complete table of contents, see first text page.

## DECEMBER CONTENTS

# Surgical Clinics of Chicago

- Clinic of Dr. Dean Lewis, *Presbyterian Hospital*  
 Separation of Lower Epiphysis of Femur with Anterior Displacement and T-Fracture. *Fifteen illustrations.*  
 Myositis Ossificans Developing in a Clean Incised Abdominal Wound. *One illustration.*  
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 Technic of Prostatectomy. *Twenty-two illustrations.*  
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 Actinomycosis of Colon: Technic of ileocolostomy; end-to-end vs. lateral anastomosis; potassium iodid. *One illustration.*  
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 Clinic of Dr. Arthur Dean Bevan, *Presbyterian Hospital*  
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### MILITARY MEDICINE.

#### ON THE ETIOLOGY OF TRENCH FEVER.

PAPPENHEIMER AND MUELLER (*British Medical Journal*, Oct. 13, 1917) discuss the etiology of trench fever. They describe the isolation of an organism from six cases in the blood, periosteum, fascia, in cultures from excised tissue and from the circulating blood. They summarize their work as follows:

They have, up to the present, succeeded in finding a characteristic organism in blood smears, in cultures from the blood, in sections of periosteum and fascia, and in cultures from these tissues.

The morphology of the organism obtained varies somewhat under different conditions. It is most definite and constant in the blood smears, whereas, in the sections of the tissue and in the cultures, smaller forms are met with the relation of which to the organisms present in the blood requires further study. So also the significance of the larger encapsulated forms seen in certain of their cultures. Since, however, they have repeatedly found, both in the cultures and in the sections of muscle, forms practically identical with those observed in the blood, they are of opinion that they are dealing with various forms of the same organism. As to the nature of the organism, they cannot yet commit themselves definitely. That it is not bacterial seems probable, (1) because of its characteristic morphology and the changes which it undergoes in culture, (2) because of its peculiar staining reaction which distinguishes it from ordinary bacteria; (3) because of its failure to grow on the usual bacteria media; (4) because of the absence of all inflammatory reaction about the organisms in the tissue. [J. B. H.]

#### REPORT OF AN INVESTIGATION INTO THE EFFECTS OF COLD UPON THE BODY.

LAKE (*The Lancet*, Oct. 13, 1917) has made an elaborate investigation upon the effect of cold on the human body. The summary of his work is as follows:

1. The temperature—6° C. must be considered critical in relationship to the effects of cold upon the tissues.
2. Degrees of cold below this temperature produce true frost-bite and actual damage to tissues.
3. Degrees of cold above this temperature only produce effects secondarily by causing vasomotor paralysis.
4. Nerve blocking does not prevent either the effects of frost-bite or of chilling.
5. The use of vaso-constrictors delays the swelling in cases of true frost-bite, while in cases of chilling the exudation may be entirely prevented.
6. Satisfactory treatment of trench foot must be directed towards preventing any appreciable rise in capillary pressure.
7. In the production of trench foot, cold must be

(Continued on page vi.)

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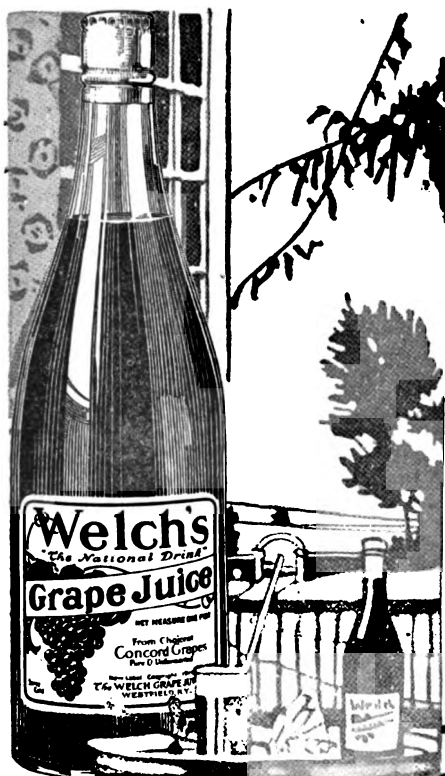
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(Continued from page 10.)

considered the essential factor, other factors being either secondary or subsidiary.

8. Treatment by the use of vaso-constrictors, either intravenously or otherwise, would appear logical and worthy of trial.

9. Treatment by nerve-blocking, either regional or central, is also suggested, although, in all probability, it cannot be expected to give good results unless used in conjunction with vaso-constrictors.

10. Prophylaxis consists in using any and every means of preventing congestion of the legs, and in avoiding, as far as possible, variations in the temperature.

11. The question as to whether any surgical procedure, such as temporary occlusion of the arteries, would bring about the desired reduction in capillary pressure, is being investigated. [J. B. H.]

## PEDIATRICS.

### DIABETES INSIPIDUS IN CHILDREN.

MOFFETT AND GREENBERGER (*Medical Record*, Sept. 22, 1917) in a very comprehensive article make the conclusions that this disease and its whole chain of symptoms which are so characteristic and always present in the true cases, has its fundamental origin in the pituitary gland and not in other parts of the body. The authors disagree with Eric Meyer and his co-workers for they do not believe that the changes in the concentration of the urine are due to a primary disorder of metabolism, but that the changes in metabolism of the body are secondary to the disease which is present in the pituitary body. This change in function which takes place works undoubtedly upon the glands of internal secretion and upon the entire organism. There is a good deal of evidence pointing to the fact that the changes observed in the kidney vessels themselves are only a part of the result of absence of pituitary secretion. The reduction of the amount of water and sodium chloride intake over long periods has no effect on the disease, but the use of pituitary extract two or three times a day leads to a marked diminution in the urinary output. [E. H. R.]

## SURGERY.

### A SERIES OF FIFTY CASES OF EXOPHTHALMIC GOITRE TREATED BY OPERATION.

WALTON (*The Practitioner*, October, 1917) reports on a series of fifty cases of exophthalmic goitre treated by operation.

The poor results of operation in the past, which have done so much to discredit surgical treatment, were, to a large extent, due to errors made in selecting the type of case for operation. In determining when the operation should best be performed it is necessary to keep these facts in mind: First, that every case shows variations in the amount of toxicity over short periods of time and that if an operation is carried out during an exacerbation it will be followed by a pronounced reaction which may be fatal, whereas it might safely be performed a week later.

Each case must be kept in bed and watched for a sufficient time for the course of the disease to be recognized, and an operation only undertaken when the symptoms are in a period of relative abeyance; a condition which can often be obtained more readily by the use of medical forms of treatment. It will be evident, therefore, that no case should be operated upon shortly after admission to a hospital or nursing home. It will be generally found that there is a period after admission, when, owing perhaps to the

(Continued on page viii.)



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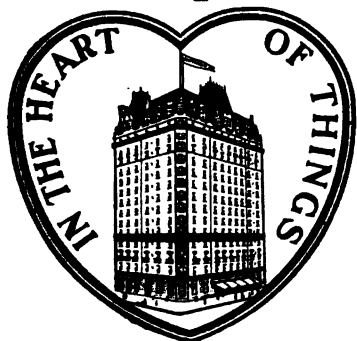
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(Continued from page vi.)

Journey, perhaps to the excitement of the change of life, the symptoms are all increased, and it is only after a period of several days or weeks that they will begin to abate.

The second factor to consider is the length of time that the disease has existed before operation is undertaken. No definite rules can be laid down to settle definitely the best time to operate. This must be decided only after long and careful observation.

The third factor is the onset of visceral changes. After the disease has been existent for a prolonged period, secondary changes take place in the other viscera.

He describes in detail operative technic, the nature of the anesthetic and of the operation. The period after operation and the after-treatment he believes to be of the greatest importance.

This period after operation may very distinctly be divided into the following stages:

1. The stage of reaction lasting for from two to four days.
2. The stage of primary improvement lasting for two or three weeks.
3. The primary relapse which, lasting for two or three months, is gradually recovered from.
4. The stage of instability when the patient is apparently cured.
5. The complete cure.

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1. Live a quiet life and avoid all forms of excitement, such as theatres, shopping, politics, etc.
2. Obtain as much rest as possible by going to bed early and taking a mid-day nap.
3. Have an abundance of fresh air, especially at night, sleeping with open windows.

### DIET.

#### Avoid

1. All stimulants, such as tea, coffee, alcohol, tobacco in any form.

2. Meat and all meat broths and soups. At most, a little beef, mutton, or chicken should be taken once, twice, or three times a week.

#### Take

1. As much milk as possible and all articles prepared with milk, such as milk soup, milk toast, cream and buttermilk.

2. Cooked vegetables, fruit either cooked or very ripe.

3. Eggs, bread, buttered toast, rice and cereals.

4. Plenty of good drinking water. If at all doubtful, the water should be boiled before drinking.

It will be seen from the above series of cases that operation, though not always successful, gives very satisfactory results. The mortality is reduced from approximately 25 to four per cent. A very high percentage, in this series 84%, are able to return to their work and lead normal lives, although a certain number of them still have symptoms of the disease. These figures will compare very favorably with those of cases under medical treatment. As a general rule, this latter has to be continued over many years. Some of the cases in this series have had treatment for five or six years before they were operated upon, without experiencing any relief. During this prolonged period, either they had never been able to do more than light work or, if they essayed more arduous duties, were forced to abandon them after a few weeks or months. After operation, on the other hand, they were often able, even if some signs were present, to carry out hard work for several years without any break.

[J. B. H.]

# The American Journal of Orthopedic Surgery

## DURING THE YEAR 1918

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"What are the Real Results of Arthroplasty?" by M. S. HENDERSON, M.D., from The Mayo Clinic.

"A Method of Studying Nerves," by SIDNEY M. CONE, M.D., of Baltimore, Md.

"Opportunities for Social Service in an Orthopedic Clinic," by EDITH M. BAKER, of the Massachusetts General Hospital.

"Old Ununited Fracture of the Patella," by WM. A. STEEL, M.D., of Philadelphia.

Among other important papers which will appear in coming issues of the JOURNAL, we are able to announce the following:

"The Scheme of Curative Workshops in Orthopedic Centers of the United Kingdom." HIS MAJESTY KING MANUEL, Military Orthopedic Hospital, Shepherd's Bush.

"The Problem of the Disabled." COLONEL SIR ROBERT JONES, C.B., A.M.S., Inspector of Military Orthopedics.

"Some Conditions of Artificial Stumps." MR. E. MUIRHEAD LITTLE, F.R.C.S.

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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

January 10, 1918

ORIGINAL ARTICLES		BOOK REVIEWS	
THE EXAMINATION OF SOLDIERS FOR TUBERCULOSIS IN THE U. S. ARMY. <i>By Edward O. Otis, M.D., Boston.</i>	33	The Medical Clinics of North America.	59
THE AFTER-CARE OF THE WAR CRIPPLE. <i>By E. A. McCarthy, M.D., Fall River, Mass.</i>	37	The Surgical Clinics of Chicago.	59
PAROXYSMAL TACHYCARDIA OF VENTRICULAR ORIGIN. <i>By F. A. Wilkins, M.D., Rochester, Minn.</i>	40	EDITORIALS	
THE RECOGNITION OF SURGICAL KIDNEY. <i>By Benjamin Tenney, M.D., F.A.C.S., Boston.</i>	44	SHELL SHOCK AND THE AMERICAN ARMY.	60
MEMBRANOUS CROUP. <i>By D. M. Lewis, M.D., New Haven, Conn.</i>	47	STANDARDIZATION OF SCHOOL HYGIENE.	62
SOME EFFECTS OF MASSAGE ON THE COLON. <i>By Franklin W. White, M.D., Boston.</i>	48	THE LIMIT OF RECOVERY IN HEMIPLEGIA.	63
LAPOLIDS IN 131 DIABETIC BLOODS. <i>By Horace Gray, Boston (continued)</i>	50	INDIVIDUAL INCOME TAX RETURNS.	64
		MEDICAL NOTES.	64
CLINICAL DEPARTMENT		THE MASSACHUSETTS MEDICAL SOCIETY	
VENTRAL FIXATION OF THE UTERUS, CAUSING DYSTOCIA. RUPTURED UTERUS FOLLOWING VERSION FOR TRANSVERSE PRESENTATION. HYSTERECTOMY AND RECOVERY. REPORT OF A CASE. <i>By L. E. Phaneuf, M.D., Boston.</i>	55	UTILIZATION OF CRIPPLES IN INDUSTRY.	67
		NOTES FROM THE DISTRICT SOCIETIES.	68
MEDICAL PROGRESS		CORRESPONDENCE	
REPORT OF PROGRESS IN OPHTHALMOLOGY. <i>By Edmund W. Clap, M.D., Boston.</i>	56	ALCOHOL IN MEDICINE. <i>Charles W. Townsend, M.D.</i>	70
		SUGAR AND SERVICE. <i>Paul W. Goldsberry, M.D.</i>	70
		MISCELLANY	
		RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR NOVEMBER, 1917.	68
		NOTICES, RECENT DEATHS, ETC.	70

### Original Articles.

#### THE EXAMINATION OF SOLDIERS FOR TUBERCULOSIS IN THE U. S. ARMY.

BY EDWARD O. OTIS, M.D., BOSTON,

*Late Contract Surgeon for the Examination of the National Guard of New England.*

NEVER before in any war or in any army have such comprehensive methods for detecting and eliminating tuberculosis from the fighting force been inaugurated and pursued as are now in operation in the U. S. Army. The Surgeon-General with his profound knowledge of and experience in preventive medicine determined, early in the mobilization of the great army, that, so far as humanly possible, tuberculosis should not be a leading factor in incapacitating men, already trained and on the fighting line in Europe, from further service. The deplorable losses in the French army from this disease have been shown by Biggs<sup>1</sup> after his return from investigating the subject in France. "By the end of December, 1915," he says, "86,000 soldiers had been returned to their homes with active tuberculous disease." And "In February of this year it was estimated that about 150,000 had thus been returned, and more are constantly being discharged for this cause." In the armies of other warring countries the history of France has been repeated to a greater or less extent, he says, the least so in England and in the Canadian Expeditionary Force. Even with all imaginable precautionary measures our army is sure to have many losses from tuberculosis, owing to the static conditions in

trench life, with all the accompanying hardships under which the warfare on the Western front is conducted, so different from the fighting in the "open" of other wars, when life led in the open air, to a certain extent, may be supposed to have counterbalanced other unusual hardships and in which even active tuberculous soldiers have maintained their strength and fighting ability and even improved.

In order to accomplish his object, the Surgeon-General ordered that all the troops in the then existing armies should receive a special examination for tuberculosis, and the management of this truly colossal task was put into the hands of Col. G. E. Bushnell of the United States Army, who had for many years been at the head of the United States Army Sanatorium at Fort Bayard, New Mexico. No more experienced or efficient man could have been selected.

The problem with the New England National Guard was to examine every single man, officers as well as soldiers, about 30,000 in all, and to complete this examination within about two months before the force sailed for Europe. It was done in rather less time. For the purpose of this examination an officer of the Reserve Corps, experienced in tuberculosis work, was detailed to take charge of the work and under him was a number of contract surgeons, some giving their whole time and some half time, all of whom had been selected for their fitness for the work on account of special experience in tuberculosis—in hospital, sanatorium or dispensary. What was required in the examinations can perhaps be best shown by quoting the instructions given to each examiner:

"INSTRUCTIONS FOR SUGGESTIVE PHYSICAL EXAMINATION OF THE CHEST."<sup>2</sup>

"The subject should be stripped to the waist and scrutinized for various developmental defects of the thorax and if found associated with an apparent delicate constitution may constitute a cause for rejection or discharge even if no definite disease is discovered. All that is absolutely necessary is to determine the presence of a tuberculous lesion of sufficient activity to constitute a cause for rejection or discharge. This can be done in well marked cases of active tuberculosis in a few moments. To demonstrate the absence of disease in suspicious cases naturally requires a longer time.

*"Auscultation.*—The subject is instructed to breathe more rapidly and deeply than normally, yet avoiding noisy respiration and relaxation of the shoulder muscles as much as possible. The examiner standing in front of the subject applies the stethoscope to the lower axillary region going upward anteriorly comparing points on both sides; note carefully any change in breathing sounds from the level of the third rib upward.

*"Examination of Back.*—Secure the breath sounds right base, proceeding upward, comparing symmetrical points on either side.

*"Physical Signs.*—Look especially for (1) Harshness and jerky inspiration. (2) Prolonged expiration. (3) Fine crackling râles. (4) Feeble breath sounds. (5) The presence of any type of râle is cause for a deferred examination. (6) Search for enlarged lymphatic glands.

"(a) The question of activity is determined by the presence of typical râles; if disseminated râles are present the examiner needs to go no further to recommend rejection, discharge or deferred examination.

"(b) Deep expiration and cough will be necessary to elicit the indeterminate râles.

"(c) Indeterminate râles in abundance are easily heard and are usually cause for rejection, discharge or deferred examination.

"(d) Severe pleural adhesions which bind the lung tissue firmly to the thoracic wall is cause for rejection or discharge.

"(e) It is left entirely to the individual examiner to determine whether a deferred examination is advisable. A recommendation for discharge should not be made until after a careful deferred examination.

"(f) Examiners are detailed for the special work of detecting tuberculosis. They will, of course, take the same action if they encounter conditions in the thorax due to other causes which demand discharge, special treatment or a deferred examination, but these cases should be reported to the camp surgeon with recommendations."

Although it is stated in these instructions, "that all that is absolutely necessary is to determine the presence of a tuberculous lesion of

sufficient activity to constitute a cause of rejection or discharge," it was also determined that every case which exhibited undoubted evidence, from the physical examination, of non-active, latent or arrested disease should either be recommended for discharge, or for further careful investigation by other members of the examining board. The reason for rejecting non-active cases is thus stated by Biggs<sup>3</sup>: "Any man," he says, "with even a very limited amount of pulmonary tuberculosis that is latent or arrested, is almost certain to break down under the physical strain of military training and army life, and a focus of disease previously latent or arrested will almost certainly become active." This statement seems to the writer to be rather extreme; in the first place a "very limited amount of pulmonary tuberculosis" is not always easy of detection; and, secondly, it has been found by many observers that arrested cases may bear the strain of military life perfectly well. "Clinically cured tuberculosis subjects," says Roepke, quoted by Fishberg<sup>4</sup>, "who stand the training well may be sent to the front." Fishberg, after citing various European authorities with regard to the effect of military service upon non-active tuberculosis, concludes that the facts which he has just cited would seem to indicate that military service in the field is no more likely to reactivate dormant or quiescent tuberculosis lesions "than any other civil occupation requiring muscular exertion, walking, exposure to the vicissitudes of the weather, etc." Life on the firing line, however, under trench conditions, makes far greater demands upon one's vitality than "muscular exertion, walking and exposure to the vicissitudes of the weather, etc."

The medical superintendent of the Manitoba Sanatorium, Canada, Dr. Stewart<sup>5</sup>, who has had experience in the care of tuberculous soldiers, says, on the other hand, that the war has not increased the number of tuberculous men so much as it has stirred *latent* disease into activity. "War, therefore," he continues, "and the training for war, creates the very conditions which lead to tuberculosis breakdown. That *latent* disease subjected to such conditions should in hundreds and thousands of cases flare up into *activity* is only to be expected."

The experience in the British Army is of a similar nature. "A twofold influence is exercised by military service on pulmonary tuberculosis," says Dr. H. Hyslop Thompson,<sup>6</sup> "while the conditions inseparable from active service *abroad* tend to reactivate the disease in soldiers with latent tuberculous foci or to induce an entirely fresh infection, the open-air life, physical exercise and ordered routine of military training in *this country* undoubtedly exercise a beneficial effect on the health of soldiers who have latent pulmonary tuberculosis, or who, from inheritance or other causes, are predisposed to the disease."

It is also to be remembered that these men

of the National Guard were soon to go to the front and there was no time to keep them under observation for any extended period. It may be mentioned here that all the men had received at least two previous examinations, one when they first enlisted, and the other when they were taken over by the national government into the federal service. Some, for one reason or another, had received several additional examinations. I recall the case of one soldier who said he had been examined six times previously. It was obviously impossible to obtain any previous history from the rapidity with which the examinations had to be made and consequently one had to depend chiefly or wholly upon inspection and the physical signs. Moreover, one had to work with great celerity in order to accomplish such a stupendous task as the examination of nearly 30,000 men—the exact number being 29,950—in the short space available. After a certain amount of training, however, in this rapid method of action, the “flying squadron of heart and lungs,” as we were facetiously called, was enabled to examine 100 men or more per examiner a day, and with a fair degree of accuracy, I believe. Col. Bushnell<sup>1</sup> states that in an experimental examination of 25 men at Fort Bayard Sanatorium the time occupied was 58 minutes, the time for each patient varying from one and one-half to two and one-half minutes. “Of course,” says Col. Bushnell, “a diagnosis made with such speed is more or less of a ‘snap’ diagnosis, and the method is not recommended for universal adoption except as a preliminary examination to select cases that may appear doubtful for later and more thorough study. Still the results were more accurate than had been expected, and show, it is thought, unmistakably, that a sufficiently correct diagnosis to exclude cases of manifest and active tuberculosis from the army could be made very quickly.” Of course there was a certain number of border-line cases or suspects upon whom, both in justice to the examiner, the service, and the man himself, a definite diagnosis could only be made, if made at all, by a second or repeated examinations at intervals after observation. The limited time, however, did not permit of an observation period, and the only thing to be done under the circumstances was a consultation over the case by several members of the examining board; and if three of the number agreed upon a verdict, the man was passed or rejected, according to the decision. If no three men could agree, the man was passed. The active cases as evidenced by persistent râles and generally defective development, with other corroborative evidence, were easy of detection and there was no doubt as to their rejection except in certain cases of acute infection, such as influenza or bronchitis. There were, however, surprisingly few of patently open active cases. The diagnosis of the non-active, latent or arrested cases,

the “old tops,” as some one called them, was not always so easy; here, the diagnosis had to be made mainly from inspection, the quality of the resonance and respiration, and the voice sounds, with what little history one could obtain in the limited time.

Undoubtedly mistakes were made with these cases and some were rejected who, upon re-examination at intervals, would not have given sufficient evidence of any tuberculous infiltration or old fibroid condition. I believe, however, that such mistakes were few, and all such cases had the advantage of an examination by several experts, at least three of whom had to agree before the final judgment for rejection was pronounced. It seemed regrettable to reject a man who had already been partially trained and who was doing his duty without apparent discomfort, who appeared to be well and robust and who had no symptoms, but the assumption was, as has been said above, that under the strenuous life and exposure of trench work he would break down and the latent or arrested disease become active. Of course there was the chance that he would go through all right, but it was considered that the chance was largely the other way. It would seem sensible that some service should be arranged for such cases whereby they could be retained in the army and the training they had already received be utilized. Klebs<sup>2</sup> suggests the creation of a service for tuberculous subjects otherwise fulfilling certain minimal standards, in which they could be under observation and yet be trained for some of the many occupations in the rear of an army which “modern military practice tends more and more to assign to especially organized and trained bodies of unarmed men.” Elliott<sup>3</sup> also is of the opinion that “men who do not come up to the standard required for service in a combatant unit (and among such we may include our tuberculous subjects and arrested or latent cases) may yet be fit for one of the non-combatant services—or may be attached to the home service in clerical or other light duties and relieve a man physically fit for overseas.”

In addition to the rapidity with which the examination had to be made there were other inconveniences under which the work had to be done which added to its arduousness. In the first place, all sorts of places had to be utilized in which to conduct the examinations—outdoors under the trees or in a field or any open space, in noisy mess halls, in crowded tents, rarely in any place where it was quiet, so that one had to become oblivious to extraneous noises and hear only the sounds elicited by percussion or heard on auscultation—not always an easy thing to do. Again, after continuous and rapid work for a time, one’s ears became so sensitive that it was actually painful to apply the stethoscope to them and one’s head became so weary that finally the examination became a sort of automatic procedure instead of an intelligent

mental process. Experience and training, however, largely obviated this difficulty.

Further, one had to watch out for deception. The man under examination might be trying to get out of or remain in the army, and in consequence would give false symptoms or misleading answers or would wilfully breathe in such a way as to make it difficult to interpret the respiratory sound. Such cases, however, were comparatively rare.

As was stated above, most of the men had received a general physical examination at least twice before; one upon their original entrance into the National Guard, and again when they entered the federal service, and the thoroughness of these examinations, so far as the lungs were concerned, appeared to vary considerably, for quite a number of obviously active cases, beyond the incipient stage, had somehow slipped through. Probably the eagerness to fill up the ranks to the maximum strength had much to do with this.

The effect of the previous occupation was strikingly noticeable in many cases; in general, the men who had led outdoor lives, like the lumbermen of northern Maine, or the farmers of Vermont, were a far more rugged set, and were almost entirely free from tuberculosis, while those who had been operatives in mills and factories and had led an indoor life were far inferior in physical development and afforded many more cases of tuberculosis. Those who had used alcohol more or less constantly also gave many cases of tuberculosis. The many cases of slight acute bronchitis, amounting to almost an epidemic in some camps, made the interpretation of localized râles without other evidence difficult if not impossible. Such cases, of course, needed interval observations in order to arrive at a definite diagnosis, but as this was not usually possible under the circumstances the cases had to be decided upon the present condition with such additional evidence and previous history as could be obtained in the limited time.

As the greater part of the examinations had to be done in camps the employment of the x-ray in suspects and doubtful cases was not available, nor was the use of tuberculin feasible. As regards x-ray examination as the sole criterion in determining the existence of tuberculosis—as I understand was done with one of the New York regiments—I believe that more errors in judgment will be made as to rejection or retention of the subject than when the decision is based upon a careful physical examination by an experienced expert. As an aid or a decisive factor in doubtful cases it is of undoubted value.

As to the results, out of 29,950 men examined 680 were found to be tuberculous and were recommended for discharge, a little over two per cent. It is to be remembered, however, that the greater number of these were of the non-

active or latent type. As will be observed, the conditions under which this large body of men were examined were far from ideal, both on account of the limited time at our disposal and the often unfavorable circumstances under which the work was done. Still I believe that the results were substantially correct and that few men were discharged or retained who ought not to have been. With one or two exceptions we received most courteous treatment and cordial co-operation from the commanding staff and the regimental surgeons, which rendered our duties very much easier. Coincident with our appearance or just preceding us in some of the camps was the psychiatric squadron, so that it would not have been strange if the officers had been somewhat impatient at this succession of examinations and asked "what next?"

The following is a general suggestive scheme for tuberculosis examinations when they can be made under more favorable auspices in a permanent camp and with sufficient time for more leisurely work and for observation:

I. So far as possible only experienced experts should be employed; the technic of percussion and auscultation may be learned in an intensive course of instruction and more or less skill acquired, but judgment in making a correct interpretation of signs and symptoms comes only from long experience.

II. Only a certain number of examinations should be made by the examiner in a day. After a period of time—differing with different examiners—spent continuously in percussion and auscultation one becomes mentally weary and his ears "dull of hearing" and his judgment uncertain.

III. The place of examination should be such that comparative quiet can be maintained; one can make an examination under noisy conditions, but it is far more exhausting to the examiner and a certain amount of accuracy is likely to be sacrificed.

IV. A short history should be taken of each soldier, which can be done by an intelligent and honest, non-commissioned officer according to a prepared schedule of which the following questionnaire is an illustration:

- (a) Have you ever had pleurisy, pneumonia, typhoid fever, influenza or any severe illness?
- (b) Did you ever spit up blood?
- (c) Have you been losing weight or strength recently?
- (d) Are you short of breath on exertion?
- (e) Have you a cough, and, if so, how long has it lasted?
- (f) Are you subject to colds?
- (g) How is your appetite and digestion?
- (h) Do you use alcohol?

V. All suspicious cases should be deferred for a second examination and consultation, and if then the doubt still exists the subject should be kept under observation for a period of time, or, if an x-ray outfit is at hand and a competent technician in charge, an x-ray negative

can be taken. It is a common experience that suspicious physical signs upon the first examination may at a subsequent examination at an interval of a few days be found to have entirely disappeared.

VI. When sputum is obtainable in a suspected case it should, of course, be examined, and for this purpose a clinical laboratory should be at hand as well as for other bacteriological examinations.

VII. All cases with any developmental defects of the chest, such as rachitis, or with defective musculature, should receive especial attention in the examination.

VIII. In suspicious cases, particularly with a pulse above the normal, the temperature should be taken at stated periods for several days.

IX. All acute respiratory infections, such as bronchitis, influenza, laryngitis, etc., should be kept under observation in the hospital.

Elliott<sup>10</sup> advises that each man should be re-examined once in three months as a routine measure. And "a most thorough medical examination is essential," he says, "when he is warned for departure overseas." While this may not be necessary or possible with a large army, and when departures are uncertain and often unexpected, at least all cases which for any reason aroused suspicion in the former examination should be re-examined, at intervals, as well as those suffering from any "bronchial trouble." If "eternal vigilance is the price of liberty," it is equally the price of keeping tuberculosis out of the army.

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- <sup>10</sup>Same as above.

### THE AFTER-CARE OF THE WAR CRIPPLE.\*

BY E. A. MCCARTHY, M.D., FALL RIVER, MASS.

THE privilege of addressing you I consider not only an honor but a patriotic duty to discuss with you such an important and timely subject as "The After-Care of the War Cripple." The preceding speaker has told you what is to be done with the soldier maimed and scarred, from an industrial standpoint. Allow me, if you will, to tell you a few things about

the status and purpose of the orthopedic surgeon in this conflict.

In order that there should not be any misunderstanding, it perhaps would be the proper thing to define the word, "Orthopedic," for we have been called, by the laity, many beautiful and sacred names. We have been called the bone doctor, the foot doctor, the toe doctor; and one woman, who called at my office, eagerly inquired if I was the toe-nail doctor. According to Col. Sir Robert Jones, who, in the opinion of orthopedic surgeons, is probably one of the greatest in the world, the misspelling of the word, "Orthopedic" is probably responsible for the wrong understanding of its service. The fact that in America the word is spelled o-r-t-h-o-p-e-d-i-c leads many to believe that the p-e-d is derived from the Latin word, *pes*, meaning foot, and therefore it is a common error that this specialty deals with disorders of the feet. The word "Orthopedic," properly spelled, is as follows: o-r-t-h-o-p-a-e-d-i-c, and it is derived from the two Greek words, *ὀρθός*, meaning "straight," and *παῖς*, meaning "a little child." It was originally intended to indicate that orthopedic surgery has to deal with the straightening of deformed children.

In the last three years' war, the experience of our Allies has shown that we must consider the soldier, wounded in battle, from a different aspect than ever before. In past wars, it was the practice, if a man was totally or partially unfit for further service to his country, to give him a pension and allow him to shift for himself, the nation believing it had done its part when this questionable form of charity had been provided. The enormity and extent of the present conflict has shown that such an attitude by any nation toward the disabled soldier would lead to an economic catastrophe and almost to the destruction of the nation.

Just think for a moment what the condition of Great Britain, with 600,000 crippled soldiers for whom no special preparation had been made at the beginning of the war, would be to-day, and in the days to come, if she had not inaugurated those marvelous curative workshops for the rehabilitation of her disabled soldiers by the aid of orthopedic surgery.

Probably the greatest leader of this particular phase of the war has been Col. Sir Robert Jones of Liverpool, and through him has grown up the system in vogue in the British empire by which cripples are taught, as soon as possible, some form of training whereby they may earn either more than they earned before the war or very nearly as much. Of course, this depends upon the amount and character of the disability with which the soldier is afflicted. In his very interesting book, under the very modest title of "Notes on Military Orthopedics," Col. Sir Robert Jones tells how, when preliminary stages of operative and surgical treatment are over, the orthopedic hospital affords a steady gradation through massage, exercise, and stim-

\* Read at the Rhode Island State Conference of Charities and Correction, on Oct. 24, 1917.

ulus to productive work which is commenced as an integral part of the treatment as soon as the man can begin to use his limbs at all. Indolent and often discontented patients are thus converted into happy men who soon begin to feel that they are becoming useful members of society and not mere derelicts.

The men are given employment in the tools they understand or an occupation suitable to their disability. For instance, if a man is put on a machine his mind turns to the work that he is doing and he very soon forgets his disability. Those of us who have any imagination at all, and particularly the orthopedic surgeons who have been confronted with the various propositions arising out of industrial accidents, cannot fail to appreciate that it is far better to keep a man busy at regular, useful and productive work, rather than at card-playing, smoking, or doing other trivialities in a hospital ward.

About a week or so ago, at a meeting of the Boston Orthopedic Club I listened with a great deal of interest to Maj. E. G. Brackett, who is the director of orthopedic surgery in the Medical Department of the United States Army in this country; and he outlined the purpose of the United States Government in the present crisis as regards the treatment of crippled soldiers. To a great extent, the system in vogue in England is, with a few exceptions, to be adopted by this country. It is known that the English and our Allies made some very bad mistakes in the beginning, but it is believed by the government medical authorities that they are now handling the cripple situation with a great deal of skill. It is the purpose of the government to establish in France about 35,000 orthopedic beds, divided into units or hospitals of about 2500 beds each; also to construct in this country several reconstruction or rehabilitating hospitals in different centers of the country. These hospitals are to be mainly orthopedic in their nature, but will include other specialties as well as general medicine and general surgery. It has always been the contention of the orthopedic surgeon, understanding deformity as he does and its final result, and understanding joints, muscles, and nerves in their various functions and abnormalities, that he can forestall some of the terrible deformities resulting from injury, provided he is on the ground or near the place where the injury takes place, to direct the methods of treatment which will be conducive to either a very good result or to the best obtainable result under the conditions; hence the establishment of orthopedic beds in France.

The purpose of the reconstruction hospital on this side of the water is to take care of those cases which can be transported to this side without danger to the patients who need further surgical treatment and training along industrial lines for their further service in life. Of course

those who come across the water will be the soldiers who are unfit for further military service on account of their disabilities, the orthopedic hospitals in France sending back to the front as many as can go back after treatment. It is also intended in these reconstruction hospitals on this side of the water to have them very completely equipped. They will have orthopedic surgeons especially trained in their line, general surgeons, internists, and all the different specialists. They will also have a department of massage, electricity, and what is known as the curative workshop, about which I have already spoken.

In order to conduct properly these hospitals it will be absolutely necessary that the communities in which they are established shall have the strict co-operation and interest of all industrial establishments situated near or at the place where the hospital is located. The problem of handling these cripples is one requiring ingenuity and skill, because on reading many of the journals of England on this particular line of work, we find that many of the soldiers do not seem anxious to pursue an industrial line, preferring a pension and a life of ease and idleness, rather than work. On account of this it has been deemed wise by the United States Medical Department to state that, until a soldier is entirely cured and educated or trained along industrial lines, he is to be kept under army discipline and is not to be discharged from the army until he is ready to perform usefully such service in civil life as his reconstructed crippled condition will permit. This precaution upon the part of the Government is undoubtedly a very wise provision. Today in civil life we are confronted with this very problem, and especially in industrial accidents where there is no law to compel a man, crippled through an industrial accident, to train and to be educated as far as possible for some other form of work. Of course I recognize that the State, in making laws of this kind, can go only so far before we get to a line where it may be said that the man's individual freedom is restricted; and it is not for me to suggest that individual freedom, as a general proposition which we prize so highly and regard so sacred in this grand democracy of the United States, shall be substituted by methods which have made the German Empire of today the greatest autocracy in the world.

I am not here to argue the pro and con of the advisability of adopting such compelling force in our civil accidents. I think, however, that we all agree that if this war continues for any long period of time, that the knowledge gained in the treatment of war cripples will greatly change our present methods of caring for the industrial cripple. I might go on here and cite many instances and defects under the Industrial Compensation law on account of which a great many of our industrial cripples are not pursuing a proper line of work or making even



enough money to support themselves—much less supporting their families.

There are many cases, as I say, that might be cited as bad examples of the workings of the present industrial laws. Just by way of illustration, let me cite one in which the individual might have been willing to take up training and education for his betterment, but there was no way or no law which compelled either insurance companies or anybody else to follow this case. This man was an alien in this country, with a wife and seven children, who injured his foot in one of our neighboring cities,—not Fall River,—by the falling of an elevator. He was treated by two practitioners for about four weeks during the acute stage of his injury, since when he has been compelled to shift for himself. This accident happened last January and since that time the man has been going around with this bad foot with no treatment at all, and with no facilities to help him by proper training. He was sent to me the other day by an attorney in Fall River for examination, and I found that he was suffering from a permanent injury to the foot, due to a fracture of what is called the os calcis, better known to the laity as the heel-bone. The x-ray demonstrated that he had several bony spurs coming out from the bone, making it absolutely difficult for that man to walk at all without severe pain.

How this man and his wife and seven children subsisted on \$7.00 a week and what the outlook for him is, I am unable to say. This would be easy to determine, however, had we some system, such as is being instituted for the war cripple, and would make a gratifying change in our industrial cases of the future.

Let us now consider, for a moment, the idea of the Government in relation to reconstruction hospitals. If I understand Dr. Brackett rightly, it is the purpose of the Medical Department of the Army to establish in different parts of the United States these various reconstruction hospitals, the purpose of which is to rehabilitate, re-educate, and retrain the crippled soldier for further service in civil life. Of course, the greatest factor in the line of treatment will be orthopedics, supplemented and aided by various specialists, such as brain men, eye men, nose and throat men, x-ray men, general surgeons, and internists. It is computed that at least seventy per cent. of the returning war cripples need some form of orthopedic treatment for their rehabilitation. There can be no doubt and there should not be, in the minds of medical men, that with a properly organized system such as this, great good will result. There can be no question in the minds of those who have studied and thought, to any extent, of these reconstruction hospitals, that in the form devised by the Government exceptional opportunities for treatment are given to the crippled soldier.

The question now arises whether this method, as outlined by the Department of Medicine in

the United States, is to work to the best interest of the country as a whole. I wish, in discussing this question, to make my position clearly understood; I do not propose to offer adverse criticism on the splendid work that is being done, because I greatly admire the present administration and the remarkable results obtained by them in such a remarkably short time. We, living at home, can have no idea of the enormity and multiplicity of details that must be carried out to prepare a nation for war, especially when that nation is a democracy, does not believe in militarism and its people are peace-loving in their general make-up. I only desire, in my humble way, to offer some constructive criticism concerning some of the problems which confront us in this great struggle and the attending ills that are sure to follow.

These hospitals are to be created as separate Government units, operating apart from the civil institutions. Now the thought I wish to suggest to you in relation to these hospitals is this: Let me say that it is a very, very serious question, and it concerns you as members of this great electorate of our country. At the present time we have, in this country, in most of our large cities of 30,000 or over, finely equipped general hospitals. Is it wise to deplete these already existing institutions of some of their staffs, or, instead of the reconstruction hospitals, should we expand the general hospitals, as at present constituted, to carry on the work intended by the Government in these reconstruction hospitals?

You know, and I know, that the number of doctors in this country, as compared with the amount of population, is not very large, and conservation should be practised here just as well as in other departments of life.

The purpose of the selective draft, inaugurated by President Wilson, was one of the greatest war measures, in my opinion, ever instituted by any nation in time of war; and that principle applies to the medical profession just as well as to the layman. Selection and organization are great factors in organizing any army for the proper welfare of the nation. I realize the army takes precedence to everything, but the President has often told us that the man working at home is just as essential to the success of the army as the soldier himself.

This question of the establishment of the reconstruction hospitals and the desirability of such, as opposed to the further expansion of the civil hospitals, we ought to consider most seriously. The American Hospital Association, I understand, is opposed to this plan of separate reconstruction hospitals; and in talking this over with a trustee of that association recently, he said they would present reasons this week to the Surgeon-General, why, in their opinion, this plan was not of the best. Of course, the trustees of civil hospitals are very much concerned with this proposition because they realize that it is their obligation and duty to care for the

civil population, and if their staffs are depleted, the problem, to them, becomes one difficult to handle.

The question also arises whether the civil hospitals, caring, as they do today, for the many industrial cases, may not profit, to a great extent, in knowledge and education, by taking care of the war cripple; and thereby become a greater benefit to the civil community in the future after the scars of this great world conflict have healed. The soldier has made a great sacrifice for his country; it is your duty and my duty to see to it that he gets the best possible service that can be had on his return from the front. The Government, establishing these new hospitals has this in view, but the scarcity of doctors and the care of the community itself are to be considered. I am not here to criticize, and I am glad to say that the criticism that was rampant and undeserved a few months ago, anent the preparation of the Army and Navy, is now fast disappearing, and that we, as a nation, are beginning to appreciate that the men in Washington, and those who are planning and directing the preparation for our defensive operations, are bringing this nation to a state of proficiency which the German autocracy failed to estimate when, by persistently carrying on an inhuman war, they forced this peace-loving nation into a world-conflict for the purpose of making the world safe for democracy.

### PAROXYSMAL TACHYCARDIA OF VENTRICULAR ORIGIN.\*

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DURING the last two years an interesting group of tachycardias has been observed in the Mayo Clinic, and the infrequent occurrence and the importance of recognition merits this report. The literature contains a wealth of material dealing with tachycardia of sinus and nodal origin, but few articles could be found relative to tachycardia having its origin in the ventricles.

The rhythmic cardiac impulse takes its origin in the sino-auricular node<sup>8</sup> or "pacemaker," a collection of specialized tissue lying in the sulcus terminalis at the juncture of the superior vena cava and the right auricular appendage. This has been established by the experimental work of Lewis,<sup>6</sup> Oppenheim and Oppenheim,<sup>5</sup> Eyster and Meek,<sup>9</sup> who found this structure to become electro-negative before the rest of the sinus region. The function of "pacemaker" may be assumed by other portions of the heart, either within or outside of the conduction system, with the establishment of an ectopic rhythm.

Lewis<sup>7</sup> has classified these abnormal rhythms as homogenetic and heterogenetic. The former is

characterized by a relatively slow rate, the onset of the rhythm is gradual, the seat of impulse production is probably always within the system of specialized tissue (conduction system) and the heart is under control of its extrinsic nerves. He believes this type to be due to exaggerated physiologic processes.

In contradistinction to this, the heterogenetic type presents a rapid pulse and rapid onset; the seat of impulse production may be within the system of specialized tissue or without, and the heart is not under control of its extrinsic innervation. This type is believed to result only from pathologic processes.

Paroxysmal ventricular tachycardia is heterogenetic and, as far as we know, is the result of myocardial disease. The recognition of this condition is of the utmost importance and can be made with certainty only by means of graphic records. The introduction of the electrocardiograph has made possible the identification of obscure tachycardias.

Experimental studies have not only clarified the mechanism of this disorder but have suggested etiologic processes. When a single induction shock is applied to any portion of the ventricle during its resting period a single premature contraction occurs.<sup>6</sup> The contraction evoked is not proportionate to the stimulus applied but always maximal,<sup>1</sup> constituting the well-known "all or none" law of Bowditch, and does not occur when the muscle is in the state of contraction<sup>8</sup> (refractory phase).

Regular series of suitably arranged induction shocks produce series of premature ventricular contractions simulating the graphic records of ventricular tachycardia. Lewis<sup>6</sup> produced premature ventricular contractions by ligation of the coronary arteries constantly, by tying off the left descending branch and in most instances by impairing the circulation in the right vessel. As the nutrition of the ventricle became progressively impaired, series of heterogenetic contractions occurred, the sequence becoming longer as the nutritional changes became more marked.

By the intravenous injection of salts, Rothberger and Winterberg<sup>11</sup> produced this tachycardia in dogs. They found that combined stimulation of the vagi and accelerators caused cessation of the heart beat, but after injection of 5-10 mg. of barium chlorid in 1% aqueous solution, premature ventricular contractions occurred. With doses of 25 to 50 mg., minus accelerator stimulation, ventricular tachycardia was produced, and at times a transient arrhythmia.

Calcium chlorid 100 to 200 mg. in 10% aqueous solution produced similar results. They concluded that these salts increase the ventricular irritability, but stated that the nodal tissues are not appreciably influenced. The electrocardiogram exhibits series of premature ventricular contractions, the complex forms varying with the point of origin in the ventricles. Iden-

\* Submitted Nov. 5, 1917, for publication.



tification of auricular contractions during the tachycardia is frequently difficult, but careful measurement shows that retrogression does not occur, as the first auricular complex of the normal rhythm falls at the proper point.

Lewis<sup>6</sup> maintains that the auricles and ventricles contract at the same rate, for each complex is identical to the adjacent one, and if auricles and ventricles were contracting at independent rates, the auricular complex would at times be superimposed and destroy the contour of the general curve. A case of ventricular tachycardia is reported by Palfrey with polygraphic tracings in which the ventricular rate exceeded the auricular. This did not occur in any of the cases reported in this paper.

One other case of ventricular tachycardia is reported in the literature.<sup>2</sup>

Two of our cases revealed impairment of conduction, one in the junctional tissues and one beyond the main branch of the bundle of His.

Five cases of paroxysmal tachycardia of ventricular origin have come under the writer's observation during the last two years, and this disorder has occurred only in .047% of the abnormal cases. Three cases have occurred in males and two in females—the youngest one 21 years, the oldest 62 years, with an average age of 41.4 years. Four of the patients gave definite histories of previous infection with the streptococcus group. Syphilis could not be determined in any case.

The symptomatology in all cases was strikingly uniform, all histories revealing distressing palpitation with tachycardia, induced by exertion or excitement. The paroxysms had sudden onset, stopped abruptly and lasted from several minutes to several weeks. Vertigo attended the paroxysms in three cases, and two patients complained of nervousness. Exertion dyspnea was a constant symptom. One case presented slight pitting edema of the lower extremities.

Objectively the cardiac examinations revealed little of significance. In all cases there was slight increase in the dulness to the left (one-half to three-fourths inches) and valvular disease was not demonstrated in a single instance.

The lowest pulse rate during the paroxysms was 109, the highest 267, and the average of all recorded pulse readings was 174.

The pathologic changes in ventricular tachycardia cannot be identified as entities as no reported cases were disclosed in a search of the literature. The experimental work of Lewis,<sup>6</sup> however, suggests obliterative coronary disease and its attendant nutritive changes as a hypothetical pathologic picture.

One of our patients died a suicidal death, and we were afforded the opportunity of a necropsy. The left coronary artery was distinctly atheromatous, which is very significant in view of Lewis' work. The myocardium of the ventricles presented a few areas of fibrosis, the mitral and

tricuspid leaflets were thickened, but apparently competent and atheroma of the aortic valves was found. The thoracic and abdominal aorta were atheromatous.

In all probability, any condition increasing ventricular irritability is a potential factor in the production of this rare condition, and until more autopsy material is available, the conclusions as to lesion types must remain hypothetical. The gravity of the condition depends, of course, on the degree of myocardial damage and the duration of the paroxysms. One patient gave a twenty-six year history of attacks, and the duration of paroxysms gradually increased with progressive evidence of myocardial insufficiency; the last one in which the patient was observed lasted six weeks. Cardiac reserve is, of course, the all-important factor in the consideration of heart disease, and this means largely myocardial quality. The maintenance of circulation is dependent on ventricular, and not auricular action, and obviously any abnormal ventricular rhythm must be regarded as potentially a grave disorder. Lewis<sup>4</sup> emphasized this point, stating that ventricular tachycardia borders on fibrillation, and ventricular fibrillation, as far as we know, is incompatible with life.

Little can be said relative to treatment. Two patients were treated, both being placed on the tincture of digitalis in doses varying from 1 to 3 cc. three times daily. The one patient was placed at rest in bed and digitalis was administered three times, to toxic effect, without any change in the abnormal rhythm. He was under observation twenty-eight days. The other patient was symptomatically improved, but his paroxysms had never exceeded a few hours.

In cases showing evidence of myocardial insufficiency digitalis should be employed, but it is very questionable whether the abnormal rhythm can be arrested by its administration. In two cases vagus pressure was applied without results. In another case the atropine test had no effect on the ectopic rhythm.

#### SUMMARY.

1. Paroxysmal tachycardia of ventricular origin is a rare condition, occurring in only .047% of all abnormal electrocardiograms recorded in the Clinic.

2. Two cases revealed conduction impairment.

3. As an etiologic factor, history of infection with the streptococcus group was elicited in four cases.

4. The symptomatology in all cases was very uniform, palpitation, tachycardia and exertion dyspnea being complained of by all the patients. Vertigo attended the paroxysms in three cases.

5. The average pulse rate during the paroxysms was 174.

6. One case coming to necropsy revealed distinct atheroma of the left coronary artery, which is very significant.

7. As life is dependent on ventricular, and not on auricular action, this condition must be considered potentially grave.

8. Digitalis medication in two cases treated did not affect the abnormal rhythm.

CASE 1 (70066). A male, 62 years of age, came to the Clinic June 28, 1915. Five-year history of paroxysms of rapid pulse and palpitation. This case not only presents coupled heterogenetic ventricular contraction and short paroxysms of ventricular tachycardia, but also impaired conduction through the junctional tissues, the pulse rate interval being 0.25 seconds. There is hypertrophy of the left ventricle. The sinus rate is 86; the ventricular tachycardia rate is 150. (Plates I and II.)

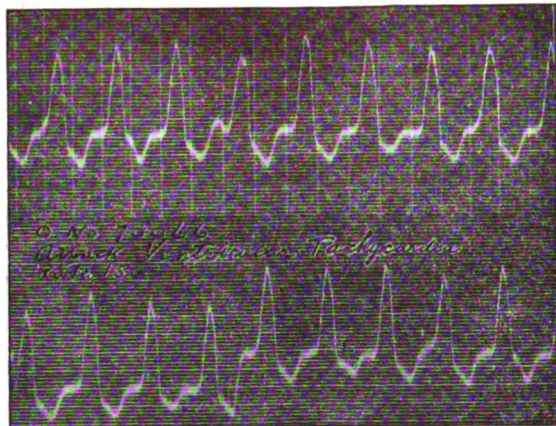


PLATE I.—No. 70,066. June 28, 1915. Leads I and III. Rate 150.

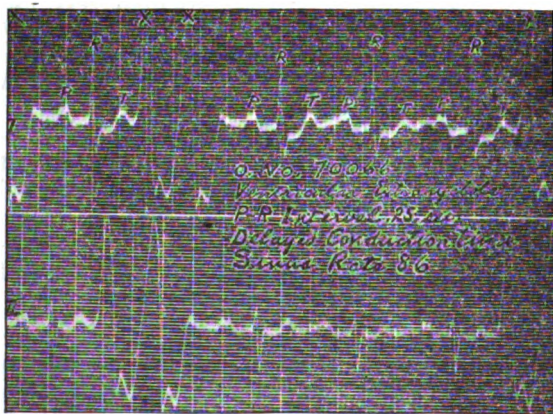


PLATE II.—No. 70,066. Aug. 31, 1915. Leads I and III. Sinus rate 86.

CASE 2 (185935). A female, 21 years of age, came to the Clinic Feb. 17, 1917. Three-year history of palpitation and tachycardia. Ventricular tachycardia. Rate, 120. In this instance the auricular complexes are evident and have the same rate as the ventricular. There is marked hypertrophy of the left ventricle. (Plate III.)

CASE 3 (194798). A male, 42 years of age, came to the Clinic May 5, 1917. Two-year history of spells of palpitation and tachycardia. Electrocardiograms show short paroxysms of ventricular tachycardia with intervening sinus rhythm. (Plates IV, V and VI.)

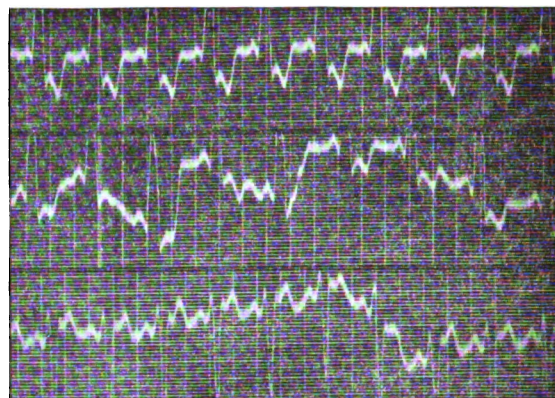


PLATE III.—No. 185,935. Feb. 19, 1917. Leads I, II, and III. Tachycardia rate 120.

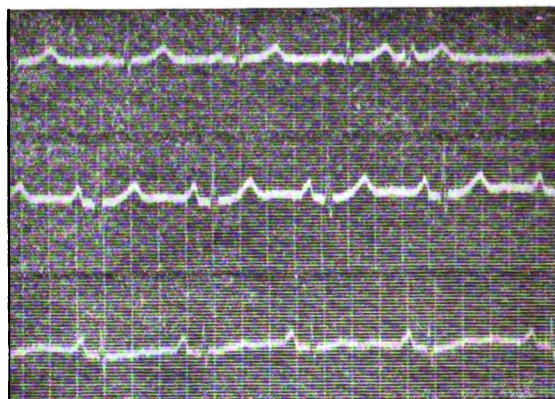


PLATE IV.—No. 194,798. June 13, 1917. 9.00 A.M. Leads I, II, and III. Rate 71. Ventricular premature contractions.

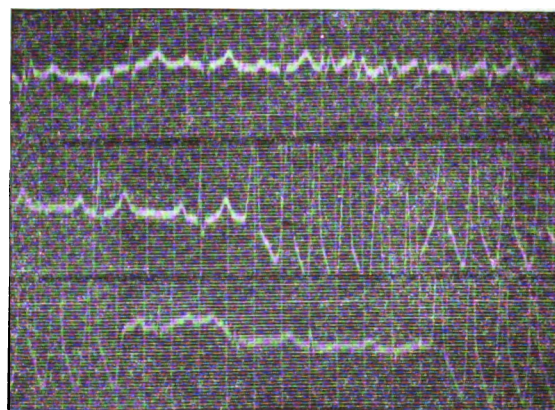


PLATE V.—No. 194,798. June 13, 1917. 3.45 P.M. Leads I, II, and III. Sinus rate 80 to 109. Short paroxysms of ventricular tachycardia rate 223 to 267.



a.



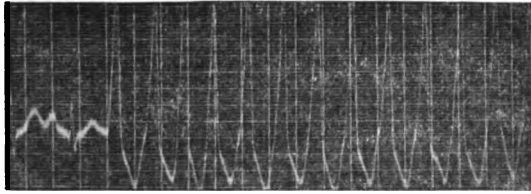
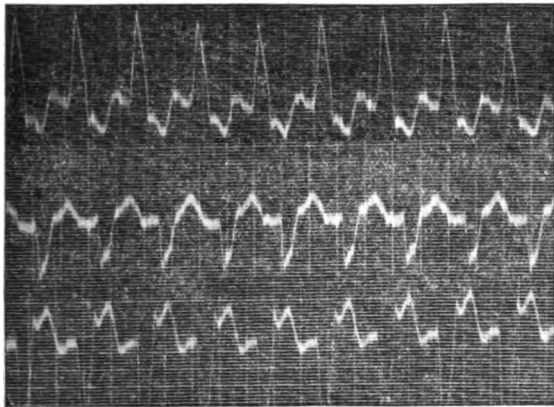


PLATE VI.—(a) No. 194,798. June 13, 1917. Lead II. Sinus rate 100. Tachycardia rate 200. (b) No. 194,798. June 14, 1917. Lead II. Rate 220.

CASE 4 (200751). A female, 44 years of age, came to the Clinic July 11, 1917. Six-week history of palpitation and tachycardia. Ventricular tachycardia with rates varying from 120 to 125. At times the auricular complexes can be identified. This case presents evidence of arborization block. (Plate VII.)



a.

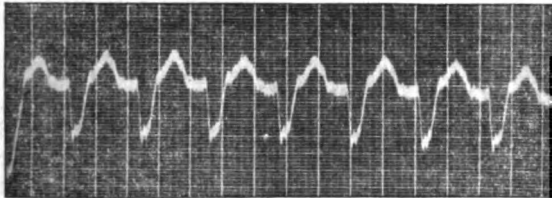
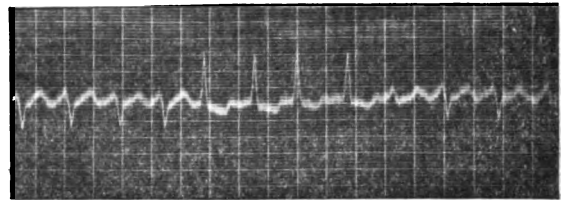
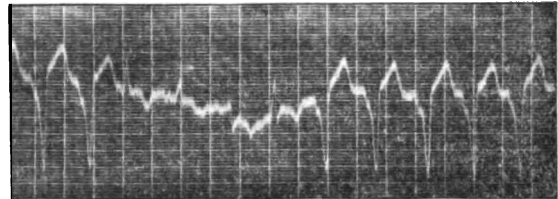


PLATE VII.—(a) No. 200,751. July 14, 1917. Leads I, II, and III. Rate 120 to 125. (b) No. 200,751. July 15, 1917. Lead II. Rate 125.

CASE 5 (98618). A male, 38 years of age, came to the Clinic July 25, 1917. Twenty-six-year history of paroxysms of palpitation and tachycardia, increasing in frequency and duration. This case presents several interesting features. Occasional complexes are seen, arising probably in the junctional tissues. There is a constant difference in the general appearance of Lead II from all the other cases, and probably can be explained by the point of origin of the ectopic impulses. They arise from the basal portion of the left ventricle and from the direction of the heart's axis; Lead II transects chiefly the "action currents" of the right heart. See Plate X. The lines x-y represent the transecting planes (Leads) by which the lines of force (action currents) are cut. Plate XII shows the failure of vagus pressure to affect the tachycardia. A marked arrhythmia is present at times, and probably signifies variation in velocity of impulse discharge. (Plates VIII, IX, X, XI and XII.)



a.



b.

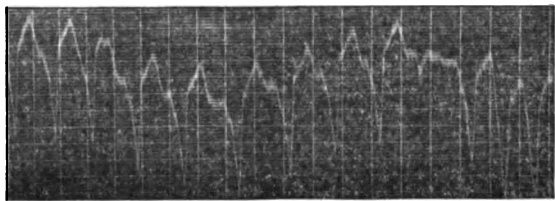


PLATE VIII.—(a) No. 98,618. July 25, 1917. Lead II. Rate 172. Occasional nodal complexes. (b) No. 98,618. July 25, 1917. Rate 172. (c) No. 98,618. July 25, 1917. Lead III. Rate 172.

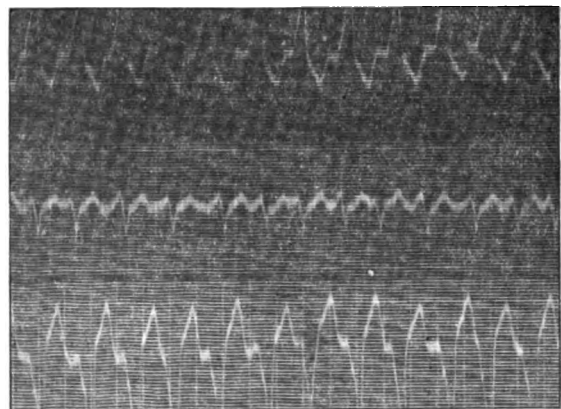


PLATE IX.—No. 98,618. July 26, 1917. Leads I, II, and III. Rate 169 to 180.

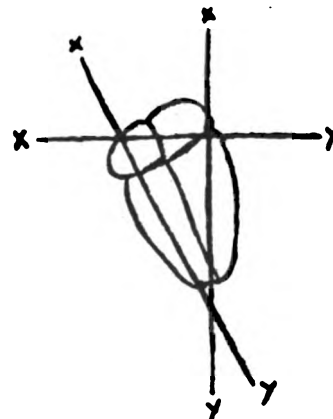
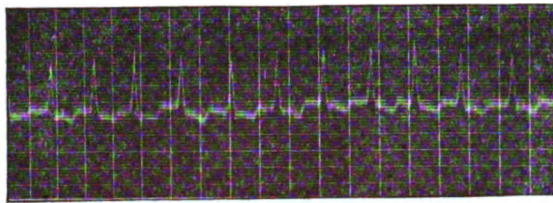
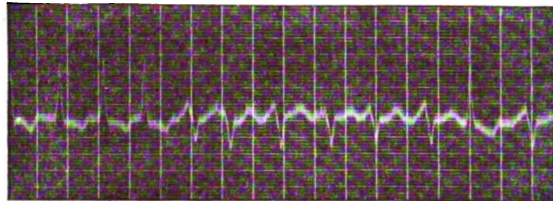


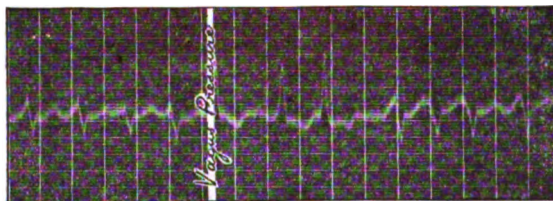
PLATE X.



a.



b.

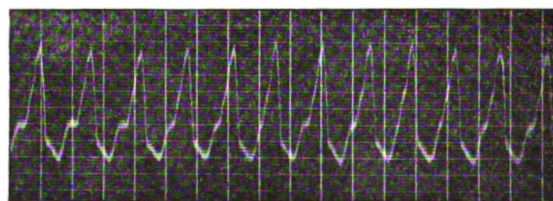


Rate 150

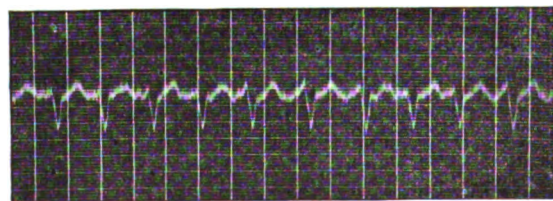
Rate 166

c.

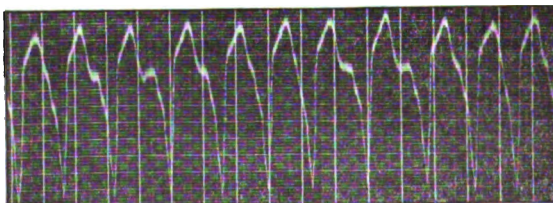
PLATE XI.—(a) No. 98,618. July 28, 1917. Lead II. Rate 150. Nodal tachycardia. (b) No. 98,618. July 28, 1917. Lead II. Rate 176. Nodal and ventricular tachycardia. (c) No. 98,618. July 28, 1917. Lead II. Failure of vagus pressure.



a.



b.



c.

PLATE XII.—(a) No. 98,618. Aug. 1, 1917. Lead I. Rate 192. (b) No. 98,618. Aug. 1, 1917. Lead II. Rate 175. (c) No. 98,618. Aug. 1, 1917. Lead III. Rate 180.

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## THE RECOGNITION OF SURGICAL KIDNEY\*.

BY BENJAMIN TENNEY, M.D., F.A.C.S., BOSTON.

SURGICAL kidneys are those whose symptoms can be relieved or cured by mechanical means. With some pathological conditions which fit into this group there may be a pre-surgical state where the fortunate physician may favorably influence the course of the disease. As yet we know less of the early symptoms of renal lithiasis, tuberculosis, and cancer than we desire. Of untreated surgical kidneys we have full knowledge from the autopsy table.

Some of the symptoms characteristic of surgical disease in the upper urinary tract are found with certain bladder conditions, and are also present when the real pathology is outside the urinary tract. They are often so concealed by misleading descriptions and contradictory symptoms on the patient's part, and by the vague and misleading names which are a part of our mental furniture, that we are easily persuaded to put them in the wrong pigeon-hole and label them pelvic, or orthopedic, or digestive, or even nervous, when they belong to the urinary department.

The separation of pathological lesions into things medical and things surgical is simpler than the proper sorting of the living men and women who bear this pathology. All agree that urinary stone is a surgical condition and usually operative. The same is true of cancer of the kidney and large hydronephrosis. All genito-urinary men, most general surgeons, and the majority of good medical men agree that renal tuberculosis is a surgical and operative disease.

There is less agreement about the type of

\* Read before the Lawrence Medical Society, April, 1917.

renal disease characterized by pyuria, unilateral discomfort, and abnormal frequency, commonly called pyelitis, because this type is subject to periods of activity and of freedom from symptoms following any treatment by mouth, or no treatment whatever, and the last drug given before the quiet period gets the credit of a cure. Then, too, there is seldom any striking pathology that can be seen and handled after the cure or death of these cases. Patients with these symptoms are usually on their feet and often unwilling to allow for the period of study which is sometimes needed to establish this cause.

The symptoms which may reasonably turn our attention to the urinary tract are:

Frequent urination, which is real when the regular daily intervals are two hours or less or when there are two or more night urinations;

Blood, or pus, or both, in the bladder urine;

Urgency or incontinence;

Tenesmus after urination.

If with these we have recurring pain or discomfort in one loin or in one side of the back, we may suspect some trouble above the bladder. Variable temperature and loss of weight are suggestive additions, as is the presence of albumen in the urine. Albuminuria has been mentioned last because it is of minor importance in the diagnosis of surgical disease of the urinary tract, sometimes overlooked in the usual tests and usually varying in proportion to the amount of blood and pus in the urine.

Frequency is the relation of the working capacity of the bladder to the kidney excretion. Two ounces per hour is the expected excretion of the kidneys. If the total capacity of the bladder is four ounces, it must be emptied every two hours, and if less, more frequently. If the total capacity is twelve ounces and there is a constant residual of eight ounces, there is a working capacity of four ounces and a urinary frequency of two hours. When the bladder has a working capacity of sixteen ounces it is probably within normal limits and will retain urine for the eight hours of sleep and comfortably through the day unless the sphincter has been injured.

Any condition which increases the pull of the ureter or causes pressure on the outside of the bladder, like a pelvic tumor, will diminish the working capacity more or less according to the posture and activity of the body. Frequent urination is not a signal for operation, but it is a warning of more symptoms to come.

The presence of blood or pus, or both, in the bladder urine is most important, but the exact location of the bleeding or suppurating area is sometimes difficult to find. Blood and pus, even in microscopic amounts, are not normal in the bladder urine and always mean some pathological condition. The presence of either is a more serious symptom than moderate frequency, and the three combined more serious

yet. The probability of finding stones, tuberculosis, or new growth increases with the length of time this combination exists.

Incontinence, without the strong bladder contraction which we call urgency, seems to imply a weak sphincter from some injury or disease. This type of incontinence produces leakage with sneezing, coughing, and sudden jars without the previous sensation of desire to urinate. Urgency is the imperative desire to empty the bladder, produced by a powerful contraction of the bladder muscle, which will easily overcome an injured sphincter and may cause leakage through a sound one. Urgency seems to be associated with irritation of the bladder trigone or of the lower ureteral fibers. Tenesmus is a further exaggeration of urgency, continuing after the bladder is nearly emptied of fluid. It amounts to a cramp of the bladder muscle and is not rarely seen when examining a bladder through a cystoscope.

Pain in the back is commonly regarded by the public as a symptom of disease in the kidney. As a matter of fact, kidney diseases are painless unless there be obstruction to the flow of urine. Unilateral pain is a symptom of stone when the stone blocks the ureter, of tuberculosis and cancer when a clot is passing down, or intermittent hydronephrosis when the ureter is kinked, and of the acute infections when there are multiple retentions of urine within the kidney substance.

Variable temperature is often seen. In acute renal infection it may run very high and in old infection it may be persistently subnormal though variable. I have seen this several times, and have one chart kept by a careful patient for six weeks where the variations cover four degrees between morning and night, and the temperature did not rise above ninety at any time. A varying temperature may complicate the diagnosis. Loss of weight in renal disease of the surgical type corresponds with pain and loss of sleep, with accompanying lack of appetite. It is not essential to diagnosis and usually appears late. While these findings are essential to diagnosis of surgical disease above the bladder they are not the only ones demanded. Cystoscopy, study of the separate excretion of the kidneys by microscope and color test, guinea-pig inoculation, and x-ray examination may all be required before the diagnosis can be perfected. The conditions under which these symptoms may develop are pyelitis, hydronephrosis, stone, tuberculosis, and cancer of the kidney. To these we may add pyonephrosis and acute hemorrhagic nephritis. Most of these conditions are associated with infection, and the cause and path of the infection are important.

One function of the kidney upon which too little emphasis has been placed, in our earlier teaching, is the excretion of living and dead bacteria from the blood stream. When the



equilibrium between the intake and increase of bacteria, and their excretion and destruction, is upset by failure of any of the excreting and destructive systems we have health failure.

The kidney system, to work perfectly, requires free blood supply and exit, and a free channel for the urine. So far as known, the arterial supply is always adequate. No work has been done on the results of partial compression of the renal vein so far as I know. The relation between the right renal vessels and the foramen of Winslow is so close that inflammatory enlargement or adhesions around the lower bile duct may compress these vessels. The vein being less resistant will yield more to pressure, and by producing a passive hyperemia in the kidney may disturb its function somewhat. This is only a suggestion, not a conclusion.

We do know clinically and by numerous animal experiments that tying off the ureter is followed by marked dilatation on the venous side of the kidney circulation and slowing of the blood stream. If active bacteria are present in this blood we get a septic thrombus whose future history depends on many unknown factors. It may become the calcified nucleus of a stone, the beginning of a pyonephrosis, or disappear.

With intermittent obstruction of the ureter we may assume a lesser degree of the same anatomical changes, and the bacteria, white and red blood cells, and some round cells from the fighting area give us the sediment picture of what we call pyelitis. If the bacteria are of a virulent type we may get a more acute general reaction, with high temperature, acute pain, prostration, and a sediment showing leakage into the urinary tubules—the acute hemorrhagic nephritis.

The word “hydronephrosis” is now applied to all cases where pain is caused by the retention of urine in the pelvis. A half-ounce may produce severe pain in one individual when another may carry a pint or more and continue work. Much of our knowledge of these smaller hydronephroses is due to their study by x-ray plates with opaque fluids in the pelvis. A symptom suggesting this diagnosis is the absence of one-sided kidney pain after lying down and its reappearance a half-hour to an hour after rising. Many hydronephrotic kidneys drain well when horizontal, but when the owner stands or sits the ureter is kinked, and pain comes on when the kidney has secreted enough urine to distend the pelvis. This symptom is more common than repeated urination after lying down.

Stone in the kidney causes pain only as it blocks the flow of urine, and stone in the ureter causes reflex irritation but not much pain unless it plugs it tightly. X-ray plates have shown many urinary stones that were unexpected and, unfortunately, have failed to show some that were present.

It is usually possible by some means to make a correct diagnosis in cases of renal and ureteral stone, though not always; but it is always possible to make the diagnosis of renal obstruction if such exists, and this is the condition for which the patient seeks relief.

Tuberculosis of the kidney is really not an uncommon disease and should be recognized earlier than it is. Its natural course varies much. I have known two patients to die within four years of the first recognized symptoms, and others whose symptoms could be traced back for six years before I saw them. Often the earliest sign which leads a patient to a doctor is a swollen epididymis which is itself infected from the stream of bacilli flowing through the prostatic urethra. Another will have albuminous urine and urinary frequency, another a hematuria, and another have recurring periods of acute bladder symptoms.

A correct and early diagnosis of renal tuberculosis is desirable, and possible except under two conditions. If the specimen of urine is obtained at a time when no bacilli are coming through, or if the tubercular kidney is blocked and excreting no urine, of course we get no bacilli. The guinea-pig test is more delicate than the microscopic examination of the sediment, but, if negative, should be repeated several times if the patient's condition suggests renal disease of this type. The smegma bacillus is the only similar one likely to contaminate a urine, and I do not always wait for the six weeks guinea-pig test when I can obtain the specimen of urine myself and the microscopic examination is positive.

A tubercular kidney is hopeless. There is no evidence from the autopsy table of recovery. Nature sometimes does a sort of nephrectomy by closing the ureter and thereby stopping excretion from this kidney. Apart from this possibility, tuberculosis of the kidney will kill its possessor as surely as cancer of the kidney and give him more misery on the way. It is as necessary to operate early for tuberculosis as for cancer; for late cases have such secondary changes in their bladders that much of their discomfort remains after the cause has been removed, while the comparatively early cases get entire relief from symptoms almost as soon as they waken from the operation. Early recognition and nephrectomy is the proper and only fair method of caring for these cases.

The recognition of surgical kidney is slower than it should be in every community. Too many physicians still treat patients for bladder symptoms without studying into the cause of these symptoms. If we remember that one function of the bladder is to serve as indicator of disease above and below it and that it is more frequently an indicator than a primarily diseased organ, we shall recognize our cases of renal tuberculosis, lithiasis, and all degrees of pyelitis and pyonephrosis more frequently and much earlier.

## MEMBRANOUS CROUP.

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FROM the standpoint of public health there are two reasons why the diagnosis of membranous croup should not be dismissed merely as an undesirable term and as such excluded from the International List of Causes of Death. As excluded or as undesirable when made, all such cases are included under diphtheria. The two reasons are not found in text-books on infectious diseases; the first is that by the recognition that not all so-called membranous croup cases are diphtheritic in origin, lives may be saved; secondly, that by such recognition workers in the health service have an opportunity of preventing other not unimportant illnesses.

During the early part of 1916 I showed that there were to be demonstrated sporadic cases of streptococcus laryngitis, simulating diphtheria where all the epidemiological factors for proof were obtainable.<sup>1</sup> Recently<sup>2</sup> I have shown that they may become an integral part of an epidemic, and that during such a period they gave rise to a not inconsiderable number of fatalities. I have also shown what is not yet a sufficiently well-recognized fact, namely, that not every case of obstructive laryngitis of measles, whether of onset or post-measles, is diphtheritic in origin. That such is the case may be shown by post-mortem examinations that are on record. The majority of all these cases during previous years and during the present time in institutions and among certain physicians were treated for diphtheria. The justification for death without further inquiry seems to have rested in the fact that throat cultures would not show the infecting organism of diphtheria when the lesion was primarily laryngeal in but a lesser proportion of cases, as well as the fact that laryngeal diphtheria was necessarily highly fatal, even when antitoxin was given early and in large amounts. Up to the time that I began to do field work in communicable diseases I personally taught the same, having been so taught during my service in the diphtheria wards of the Boston City Hospital. As a result, first, of investigation of the individual who may have caused the case; secondly, the findings of cultures, not that they were negative but what they showed positively, in conjunction with the fact that diphtheria did not follow such cases and their environs, but that illnesses consequent on what were apparently the positive findings of case, carrier and contacts did follow, was sufficient reason for investigation.

That lives may be saved has been proved to me by the following. Recognition of this so-called complication during measles as being purely streptococcal in a series of cases led me to advise immediate intubation with a further

confirmatory diagnosis during that operation in the following manner. A skilled operator has determined by the feel that in a larger per cent. of cases the larynx is edematous only. Secondly, repeated cultures have always shown a streptococcus. Beyond diagnosis was a most gratifying experience that such cases did well, recovered without antitoxin and, after periods upwards of a year, have justified the diagnosis at least, by not having developed even palatal paralysis. There yet remains in my memory the case of one of two small sisters, both with measles, but one referred as a probable case of diphtheria. Practically moribund, the patient surprised even the operator by recovery after intubation. A similar series of cases treated by antitoxin and eventually intubated all died. During the past year a study of the laryngeal cases of suspected or of true diphtheria under age 5 showed the following: In 7 cases cultures sent to the laboratory showed K-L in 6 instances. In all instances there was demonstrated the carrier in the family. All recovered with moderate antitoxin doses and without intubation. The remaining instance was sent to the hospital without cultures,—previously a moribund case of primarily faucial diphtheria. In the latter instance the carrier was in another family in the same house. There were 13 other cases diagnosed as laryngeal diphtheria and 2 as membranous croup. Of the 13 cases, 4 had laboratory cultures showing a streptococcus, a demonstrable streptococcal carrier, and all recovered as cases of treated diphtheria. Of the remaining 9 cases, 7 cases died where epidemiological evidence showed that they were other than diphtheria. One was an infant, the secondary cause of death being given as pneumonia of the same duration as the diphtheria—2 days. In the family were two older children with purulent nasal discharges giving pure cultures of a Gram-positive diplococcus, one having had the discharge for some two weeks, while the second had had it less than one week. In 4 of the cases there was present in the family the nasal streptococcal carrier antedating the case and followed by streptococcal sore throats in other older children in the family in three of the cases. In the fourth instance there had been preceded first a sore throat complicated by laryngitis, then two succeeding laryngitides, to culminate in the final fatal case in the youngest member of the family. The only one of the children not ill was the nasal carrier. In 2 instances measles followed in the families, one case not fatal being later returned as that disease. In 1 instance we had to deal with spasmodic croup, and the final instance gave no data—previous, present or future. The two cases of membranous croup were also of the same class, having neither family, house nor neighborhood previous or later infections to explain them. Both were cases of sudden death at one year of age, probably having to do with status lymphaticus.

During this time I have seen 10 cases where assurance was given the physician, by cultures and by examination of the other children in the family, that the streptococcus was the etiological factor. Four of these were intubed. There were no fatalities.

Inasmuch as there was nothing more extraordinary about the 11 cases with 5 deaths in the first series as contrasted with the 10 cases and no deaths, there may have been a something extraordinary that the second class did have done for them. Therein I believe lies the possibility of saving lives. Instead of being given antitoxin and relying on that to relieve the condition they were treated with sedatives and vaporizations. In other words, knowing a case to be laryngeal diphtheria, we rely on antitoxin for combating toxicity and intube with the knowledge that only at a certain time is relief of obstruction necessary. The streptococcal infections are characterized by a much more rapid course. In waiting for the same degree of obstruction the case is more immediately lost. Earlier interference from a more acute edematous process with more constant medical treatment has apparently given absence of fatalities. It is so definitely so to me that I feel sure that a similar study of these negative culture cases of primary laryngitis if studied both sporadically as well as during grippe prevalence, when they may be truly epidemic, in metropolitan cities will aid in cutting down the death rate.

Recognition of these cases is secondly of the greatest importance from the public health standpoint in preventing further illnesses in the following manner. It being the custom of cities to culture all family contacts and diagnosing carriers from the cultures, it would be found that no carriers existed in the house or neighborhood should they seek further than the house. There would be free for future neighborhood and family contact these streptococcal nasal carriers. The secondary and return cases in families and in the neighborhood are varying grades of septic sore throat as well, and any connection with the previous case is not realized. Less frequently I have found that the bronchopneumonias of infants in the family follow the appearance of the carrier. I have previously shown that the streptococcal nasal carrier leaves behind him a train of victims of major and minor illnesses which is unbelievable until the detective finally trails him to his lair. There is no exaggeration in saying that Pandora's box was hardly a circumstance. The illnesses and debilities caused by such a carrier in contradistinction to a diphtheria carrier, extend beyond the field of contact of children. It is so common to find among the working members of the family coincident "malaria," "grippe," "sore throats" and obscure minor complaints that there is need of much more field work to show that they are not dependent on the same factor.

#### SUMMARY.

It is important to recognize that membranous croup may not be a primary laryngeal diphtheria; that it is probable that many cases treated as such would not be fatal cases were they so recognized and more rationally treated.

Recognition of sporadic and epidemic streptococcal laryngitis opens up a wide field in preventive public health work from appreciation of true carriers. This field apparently extends beyond the disabilities and illnesses of childhood and is worthy of examination as to its extent as a measure of health insurance for the wage-earners.

Though less frequent, similar study should be made of the pneumococcal type as offering analogous preventive measures and reduction of mortality.

"Croup" is as undesirable a term as "membranous croup." Equally pernicious, both should be so listed and the reader referred to "laryngitis," with the query as to what the infecting organism was.

#### REFERENCES.

- <sup>1</sup> Streptococcal Infection Simulating Diphtheria. *Boston Medical and Surgical Journal*, June 8, 1916.
- <sup>2</sup> The Modus Operandi of Epidemics. *Interstate Medical Journal*, Vol. xxiv, No. 6.

### SOME EFFECTS OF MASSAGE ON THE COLON.\*

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ABDOMINAL massage is a method freely advised and used in intestinal stasis both general and local. We have felt uncertain about the actual results obtained and wished to verify them by actual observation. Cannon's method of direct examination of the bowel with the röntgen ray was used in studying the human colon at intervals after vigorous abdominal massage (especially of the colon).

The persons examined were vigorous, and without any important disease of the digestive or other organs. They came with a well-filled colon about twenty-four hours after a barium meal, were massaged, and the colon watched at intervals with the röntgen ray and fluorescent screen to see what happened. Deep abdominal massage was given for five to twenty minutes, especially over the course of the colon, transversely, both to mash up the contents, and to push them along, if possible.

There was great variation in different persons in the accessibility of parts of the colon to

\* Read at the thirty-second Annual Meeting of the Association of American Physicians, Atlantic City, May 2, 1917.



massage. For example, we especially wished to empty the cecum "the human drain trap," but we found the cecum in all sorts of positions, from deep in the true pelvis (and entirely out of reach) or in the hollow of the ileum and easily accessible, to positions above the iliac crest with only a soft background. Unless one *knew* where the individual cecum was, much effort to massage it directly would be wasted. The transverse colon hung at quite different levels and the splenic flexure was often, and the hepatic flexure at times, well under the edge of the ribs and very hard to reach. The pelvic colon was practically inaccessible.

We see difficulties for the patient in following Sahli's advice to perform auto massage with a cannon ball "along the probable course of the colon."

We found that vigorous abdominal massage usually mashed up the contents of the colon but had little or no immediate effect in moving the solid contents forward; Case<sup>1</sup> and Hertz<sup>2</sup> report similar results. This was true of massage of any sort whether transverse, or stripping along the course of the colon. Strong pressure will not move the contents of the ascending colon into the transverse colon or the contents of the transverse into the descending colon. The haustrae, by gripping the contents in many places, held it firmly.

If the colon is distended with gas a small lump of contents may occasionally be moved a short distance forward. If the abdominal walls are well relaxed and the bowel forcibly compressed with the fingers in a favorable place like the iliac fossa, where there is a firm background, a little movement may result. When a full cecum felt as if it were being emptied at once, it was found that gas had moved forward, and solid contents merely flattened out in both directions.

We found when the cecum was low, or below the brim of the pelvis, that massage often pushed the tip of the cecum still lower into the pelvis and pushed material further down into the cecum, filling it fuller than before. This is unfortunate as these are just the cases where mechanical help in emptying the cecum is most needed.

These results contrast sharply with the easy statements often found in text-books that "massage pushes along the contents of accessible portions of the stomach and bowel."

It is evident that any favorable effect of massage must be due to increasing the tone of the colon, not by directly squeezing its contents along.

In watching the later results of massage of the colon at intervals of several hours, it was found that massage sometimes delayed, but usually hastened, the passage of colon contents evidently by stimulation of slow peristalsis. For example we found that massage at 2 p. m. would quite often cause an extra stool at 8 or 9 p. m., in addition to the usual morning stool.

The occasional delay after massage was probably due to muscular spasm.

The effect of massage was small in comparison with the stimulus of taking food. That is, the well-known forward movement in the colon after a meal was much greater than we could produce in the same time following vigorous massage of the colon.

A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. That is, a part of the colon suddenly loses its haustral markings, forming a sausage-shaped mass which travels rapidly from one part of the colon to another. These large movements had no direct relation to the force of massage; for example, deep massage in one case would give no result, and light palpation would cause a marked mass movement in another. The massage was not a mechanical stripping process, but the stimulus to a reflex mechanism.

#### SUMMARY.

Cannon's method of direct examination of the bowel with the röntgen ray was used in studying the human colon at intervals after giving abdominal massage (especially of the colon.)

There was great variation in different persons in the accessibility of parts of the colon to massage.

Vigorous massage usually mashed up the contents of the colon, but had little or no immediate effect in moving the contents forward. When a full cecum was apparently emptied at once, it was found that gas had moved forward and solid contents merely flattened out in both directions.

Massage sometimes delayed, but usually hastened the passage of colon contents at the end of several hours, evidently by stimulation of slow peristalsis. The effect of this stimulus was small in comparison with the stimulus of taking food.

A rapid onward "mass movement" of a large portion of colon contents was seen very rarely (twice) after massage. These large movements had no direct relation to the force of massage, but followed gentle palpation.

Prompt emptying of any part of the colon by massage is a fallacy. This is especially true of the low cecum, which is usually inaccessible and is often pushed lower and filled fuller than before. The good effects of massage are found in a mashing up of the intestinal contents and a stimulation of muscular tone and slow peristalsis, which usually drive the contents slowly forward for several hours.

I wish to acknowledge my indebtedness to Prof. Walter B. Cannon of Boston for valuable help and suggestions.

#### REFERENCES.

- <sup>1</sup> Case: *Journal of the Iowa State Med. Soc.*, vi, 1916.  
<sup>2</sup> Hertz: *Constipation and Allied Intestinal Disorders*, London, 1909.

## LIPOIDS IN 131 DIABETIC BLOODS.

BY HORACE GRAY, BOSTON.

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(Continued from page 20.)

Analysis of the readings on 204 consecutive cholesterol extracts shows:

1. That my left eye was more accurate than my right. For, whereas 66% of these readings happened to be done with the left eye, Table III shows that when the first two readings did not differ by more than 0.2 mm., the left eye was responsible for 71% of these. This greater accuracy is presumably due to (i) its more frequent use at the microscope (to allow simultaneous drawings with the right hand), just as the greater acuity of the modern left ear is due to its monopoly at the telephone; or (ii) left-eyedness of even longer standing, i.e., a natural individual characteristic. This dominance of one eye has been independently discussed by Callan, Rider and especially interestingly by Gould.

Callan, P. N.: "Are We Right Sighted?", Medical Record, April 2, 1881, xix, 390.

Rider, W.: Unilateral Winking as a Test of Comparative Visual Acuity, Trans. Am. Ophth. Soc., 1898, 434-452.

Gould, G. M.: Righthandedness and Lefthandedness, Lippincott, Phila., 1908, *passim*.

Each reading in the colorimeter was made in this way. The fields were quickly matched during about 10 seconds; the eye was then closed for a like interval, and the fields were again adjusted; a second pause, a third setting. This process was always repeated once. If the second reading varied by more than 0.2 mm., a third or even a fourth was made, and on a bad day when the readings were variable, even a fifth reading.

TABLE III.

LEFT EYE MORE ACCURATE THAN RIGHT.

No. extracts in each group..	No. OF READINGS PER EXTRACT NECESSARY TO GET FIGURES IN CLOSE AGREEMENT. 1st-2d				
	AVERAGE OF				
	2*	3	4	5	
47	82	21	43	11	
Per cent. of these done with left eye	74%	70%	57%	58%	54%
	71%		57%		

\* i. e. 0.2 mm. difference.

2. That the accuracy was essentially the same whether the reading fell within 1 mm. of 15 (standard), or within 2 or 3 or 4 or 5  $\pm$  mm. The groups are compressed, as in the last horizontal line of the previous table.

That is to say, it is just as easy to read specimens which are 33% stronger or weaker than

standard as it is to read them when they are almost the same concentration.

TABLE IV.

EQUAL ACCURACY OF READING WHEN UNKNOWN IS ANYWHERE BETWEEN 1-3 STRONGER AND 1-3 WEAKER THAN STANDARD.

	1-3	AVERAGE OF			
		2	3	4	5
within 1 mm. $\pm$	67%	33%			
1-2	58%	42%			
2-3	64%	36%			
3-4	75%	25%			
4-5	68%	32%			

Several authors have discussed the yellowish or brownish tint of the:

1. Chloroform extract.
2. Unknown field in the colorimeter.

Mueller, J. H.: A Comparison of the Results Obtained by Colorimetric and Gravimetric Determinations of Cholesterol, Jour. Biol. Chem., 1916, xxv, 549.

Weston, P. G.: Colorimetric Methods for Determining Serum Cholesterol, Jour. Biol. Chem., 1916-17, xxviii, 383.

Bloor, W. R.: The Determination of Cholesterol in Blood, Jour. Biol. Chem., April, 1917, xxix, 437-445.

Luden, G.: Studies on Cholesterol. III. The Influence of Bile Derivatives in Bloor's Cholesterol Determination, *ibid*, 463-476.

The former I have noticed only seldom, and only after heating past dryness, as the original description states. The latter occurred in perhaps a third of the determinations, i.e., less than Luden found and far less than Mueller. It was so slight that I seldom gave it two thoughts and frequently got two consecutive readings identical, or only 0.1 mm. apart. It must be granted that this does not prove that these readings were at the correct level. In the rare instances when the brown was marked, whether in extract or field, the determination was repeated.

## TIME REQUIRED FOR THE VARIOUS METHODS.

After some practice it was found possible to do determinations at about this rate:

TABLE V.

METHOD	SPEED.	
	NO. DETERMINATIONS PER 8-HR. DAY	AVE. NO. MINUTES FOR EACH
Bloor's Fat (total-fat)	24	20
Cholesterol .....	16	30
Lecithin .....	12	40

It must be noted, however, that:

1. The oleic acid and cholesterol being in volatile solvents should be made up in small quantities, which means frequent repetition.
2. Alcohol, ether, and often acetic anhydride need redistilling.
3. The manufacture of the sodium molybdate, and from it of the strychnine molybdate, is troublesome at best; when made it not infre-

quently is useless, and always is unstable, and therefore must be made up often.

4. Pickling the whole blood, or centrifuging and then pickling the plasma, uses up more time than would be expected; this is also true of:

5. Washing beakers.

Suppose the aggregate of these procedures to require as much time as the actual determinations, then in a day a fair worker can do about 12 total-fats, 8 cholesterols, or 6 lecithins. A single determination of course requires much longer than the average time tabulated; but it may be stated that for a critical case 3 cc. of blood could be taken from the patient and the total-fat analysis finished in  $1\frac{1}{2}$  hours, longer to be sure than blood-sugar, but I believe more significant.

#### FORMULAE.

The *determined* values, in g. per 100 cc., often called %, may be found from the following formulae:

**Bloor's Fat-Method.** When using 3 cc. of blood pickled in 100 cc. alcohol-ether, and of that extract 10 cc., and supposing 5 cc. of standard solution as made up contains 2.3 mg. oleic acid and is set at 20 mm.:

$$\frac{\text{Reading of standard}}{\text{Reading of unknown}} \times \frac{2.3}{3} \times \frac{100}{10} \times \frac{100}{1000} \text{ i.e. } \frac{20}{\text{Ru}} \times \frac{2.3}{3} \text{ i.e. } \frac{115}{\text{Ru}}$$

**Lecithin.** When using 15 cc. of the same extract, and when 5 cc. of the standard contains 0.15 mg.  $\text{H}_3\text{PO}_4$  and is set at 20 mm.:

$$\frac{20}{\text{Ru}} \times \frac{0.15}{8} \times \frac{8}{15}, \text{ i.e. } \frac{534}{\text{Ru}}$$

**Cholesterol,** when using 10 cc. extract, and a standard containing 0.5 mg. set at 15 mm.:

$$\frac{15}{\text{Ru}} \times \frac{0.5}{3}, \text{ i.e. } \frac{25}{\text{Ru}}$$

The *calculated* values may be found from these formulae:

#### Total Fatty Acids.

**W. B.:** Total-fat in W.B. minus cholesterol in W.B.

**Pl.:** Total-fat in plasma minus cholesterol in pl.

**Corps.:**

$$\frac{(100 \times \text{T.F.A. in W.B.}) - (\% \text{ pl. in blood} \times \text{T.F.A. in pl.})}{\% \text{ corpuscles in blood}}$$

**Lec. and Chol. in cps.** are estimated by a formula similar to the last.

#### Glycerides.

**Pl.:** T. F. A.  $-(7 \times \text{L.}) - (4 \times \text{chol.})$ ; result  $\times 1.05$   
**Cps.:** " " " " " " " " " " " "

**Ratios** are found by simple division.

**Total Lipoids in Pl.** (Total-ether-soluble or total-fat of other investigators): is the value

often given by earlier workers, and for comparison is, therefore, here calculated:

Lecithin in plasma  $+ 1.4 \times$  cholesterol in plasma  $+ \text{glycerides in plasma}$ :

The reason for 1.4 rather than simply 1 is that the extra  $0.4 \times \text{C}$  represents the fatty acid combined with cholesterol. Assuming that the principal ester is cholesterol-oleate, the theory for the factor is:

Oleic acid .....  $\text{C}_{18}\text{H}_{34}\text{O}_2$  M.W. 282  
 Cholesterol .....  $\text{C}_{27}\text{H}_{46}\text{OH}$  M.W. 386

Mauthner and Suida, cit. by Mathews, A. P.: Physiological Chemistry, New York, Wood, 1915, p. 85.

Now these combine in proportion to their molecular weights:

$$\frac{\text{Fatty acids (oleic)}}{\text{Cholesterol}} = \frac{282}{386}$$

Cholesterol as ester  $= 0.55$  (cf. Table VI  $\times$  total-cholesterol (usual cholesterol determination, and therefore called simply "cholesterol" throughout this paper).

Fatty acid combined as cholesterol ester  $=$

$$\frac{282}{386} \times 0.55 \times \text{Chol.} = 0.40 \times \text{cholesterol}$$

TABLE VI.

PER CENT. OF TOTAL-CHOLESTEROL OCCURRING AS ESTER.

ORIGINAL FIGURES ARE HERE COMPILED INTO ONE AVERAGE FOR BOTH SERIES	WHOLE BLOOD		PLASMA	
	No. of Spec.	Ave. %	No. of Spec.	Ave. %
Normal .....	11	34	26	58
Diabetic .....	7	47	18	55

Bloor, W. R., and Knudson, A.: Jour. Biol. Chem., February, 1917, xxix, 7.

Although it has been necessary to omit the Table of Basal Figures to which the following notes pertain, their retention has seemed of possible value:

#### CHECKS.

I. As a check, the lecithin in the corpuscles has been multiplied by 0.70, giving the theoretical amount of fatty acid in the corpuscles combined with the phosphatides alone. The value for the total fatty acids in the corpuscles should, of course, cover this, in fact theoretically should cover also the fatty acid combined in the glycerides. No attempt has been made to consider the latter, but when the quotient ( $0.7 \times$  lecithin in the corpuscles) is too large, the procedure has been either to

1. Do a duplicate determination, marked D, or to

2. Correct, C, by plus or minus 3% (which is roughly the limit of error) any or all of the 6 *determined* values. The least inconvenient way of doing this has seemed to take one, or if necessary more, of the following 3 steps:

1. Total-Fat: Increase value in whole blood and decrease in plasma.
2. Cholesterol: Decrease value in whole blood and increase in plasma.
3. Lecithin: Decrease value in whole blood and increase in plasma.

If even then the total fatty acid in the corpuscles is not larger than  $0.7 \times$  lecithin in the corpuscles, then we can only say that all possible corrections have been made, but without obtaining the values which we should expect. These deficiencies have been marked "!" Some of the factors responsible may be:

1. That the values in question are calculated.
2. Low percentage of corpuscles in the patient's blood.
3. High total-fat values.
4. The small amount of glycerides ordinarily present in corpuscles.
5. That in the nephelometric part of the total-fat method cholesterol may read differently from fatty-acid.
6. Lecithin may possibly in some instances be combined with one molecule of fatty acid instead of two.

II. Whether values for the various lipoids are always higher in plasma than in corpuscles is a point of some interest. An invariable rule would be a second convenient check on one's accuracy. A rule may be stated as follows:

Total-Fat: In whole blood (i.e., corpuscles) less than plasma.

Cholesterol: In whole blood less than plasma.

Lecithin: In whole blood more than plasma.

Unfortunately there are exceptions, i.e., the reverse being true, as listed in Table VII. In each of the three methods several pairs of whole blood and plasma have been duplicated, in order to make certain that the exception was not accidental. This possibility is suggested by the obvious fact that many of the pairs of values are so near alike that they could be moulded Procrustean-like to the rule by correcting within the limit of error.

TABLE VII.  
CHECK II.

	TOTAL-FAT	CHOL.	LEC.
No. of exceptions .....	5	19	27
No. of determinations ....	116	116	114
Frequency of exceptions in per cent. of determinations	4%	16%	24%

From Table VII the rule appears of value as a check only on the total-fat method, with which only 4% of determinations break the rule. In 116 cholesterols there were 19 exceptions, i.e., W.B. greater than plasma; a marked contrast to Henes' finding of no exceptions in more than 100 cases.

Henes, E.: Proc. N. Y. Path. Soc., December, 1913, N. S. xiii, 155-170.

The physician will say, Cannot these six determinations be reduced to one, i.e., using only

one of the three methods on either whole blood or plasma?

#### WHOLE BLOOD OR PLASMA, WHICH?

The former seems to me the better.

The considerations are given in Table VIII.

TABLE VIII.		WHOLE BLOOD vs. PLASMA.	
Custom in blood analysis	Blood needed, c.c. More apparatus More time, minutes Completeness of extraction of lipoids Extent of variation	WHOLE BLOOD	PLASMA OR SERUM
		Blood sugar Non-protein-nitrogen Urea-N Uric acid Ammonia-N Creatinin Acetone R p H Chlorides 3	Wassermann fixation CO <sub>2</sub> R p H Chlorides 6+ Centrifuge 3900 R.P.M. 15+ Greater
		At most, only slightly less than from plasma	Greater
		Less, because corpus change relatively less than plasma in lipid content	

#### TOTAL-FAT, CHOLESTEROL, OR LECITHIN—WHICH?

What one method, the clinician will ask, is the most practical? Certainly not lecithin, because:

1. Its simplicity is least of the three methods.
2. Its speed is least of the three methods.
3. Its significance is least of the three methods, inasmuch as the diabetic values rise least above the normal average.

Of the other two methods the "total-fat" seems to me the better, principally because:

1. Its speed (in my hands at least) is greater.
2. Its threshold between normal and diabetic is moderately definite.
3. Its diabetic rise above the normal average is greater, thereby giving the largest scale by which to judge degree of the lipemia.
4. It represents 91% of the total lipoids, alike in the 3 clinical groupings of mild, moderate, severe. The lowest per cent. was 88, in the moderate and also the severe groups; the highest 96, in the mild group.

All the considerations are given in Table IX.

TABLE IX.

CHOICE OF METHOD: TOTAL-FAT, CHOLESTEROL, OR LECITHIN.

INSTRUMENT	TOTAL-FAT	CHOLESTEROL	LECITHIN
Name	Nephelometer	Colorimeter	Nephelometer
Accessibility	=	=	=
Familiarity		+	
Ease of Use		+	
METHOD			
Simplicity	=	=	Less
Speed: samples of extract per 8-hour day.	24	16	12
Accuracy { % variation $\pm$ from mean No. of samples duplicated }	4.5	3.5	3.6
	118	66	60
Expense	Bloor Conversion Attachment \$6	Acetic Anhydride more than \$2 a lb.  Chloroform more than \$1 a lb.	
Specificity: no. of substances determined	2	1	1
RESULTING VALUES			
Familiarity		+	
Diabetic threshold	+		
Diabetic max. in { W. B.	16	7	8
Normal aver. { Pl.	25	10	5
% of total lipoids	91		

## THRESHOLD.

A border line between normal and diabetic values is worth establishing, even approximately. That it can be absolutely defined is unlikely both *a priori* and also judging by the attempts that have been made to set a sharp line for blood sugar.

A threshold may be looked for as the level of a substance in the blood above which it either:

1. Signifies excess over physiological normal variation,
2. Goes further and is excreted by the kidney.

## BLOOD GLUCOSE PER CENT.

The blood-sugar threshold, for instance, by criterion 1, hyperglycemia, is at the present time regarded as about 0.11%. That this value is only approximate is evident from the variations in Table X, which may be due to:

1. The variety of methods employed, both for removal of proteins and for estimating sugar. In general, as Rolly and Oppermann have pointed out, those methods which determine blood sugar by reduction generally give lower values than those which analyze it colorimetrically.

2. The use of *plasma* by a few investigators.

3. The occasional fixing by an author of a normal "maximum," while he publishes simultaneously a still *higher* value in what he calls a normal person. The latter figure has been preferred in compiling the table.

TABLE X.

## BLOOD SUGAR NORMAL MAXIMUM.

Seegen .....	0.194	1900
Frank .....	0.165	1910
Taylor and Hulton .....	0.150	1915
Strouse .....	0.140	1915
Schumm and Hegler .....	0.130	?
Michaelis .....	0.130	1914
Schirokauer .....	0.120	1912
Freund and Marchand .....	0.120	1913
Foster .....	0.120	1915
Gettler and Baker .....	0.120	1916
Gradwohl and Blaivas .....	0.120	1917
Cummings and Piness .....	0.120	1917
Jacobsen .....	0.116	1913
Purjesz .....	0.112	1913
Klemperer .....	0.110	?
Leire .....	0.110	?
Bang .....	0.110	1913
Kowarsky .....	0.110	1913
Lewis and Benedict .....	0.110	1915
Joslin .....	0.110	1917
Epstein and Aschner .....	0.109	1916
Liefmann and Stern .....	0.105	1906
Naunyn .....	0.100	1906
Hopkins .....	0.100	1915
Hollinger .....	0.096	1907
Rolly and Oppermann .....	0.088	1912

Seegen, J.: Die Zuckerbildung im Thierkörper, 1900, Berlin, 105.

Frank, E.: Über einige Grundtatsachen aus der Physiologie des Blutzuckers nebst methodischen Vorbemerkungen, Z. physion. Chem., 1910-11, lxx, 129.

Taylor, A. E., and Hulton, F.: On the Estimation of Non-Protein Nitrogen and Glucose in Finger Blood, Journ. Biol. Chem., 1915, xlii, 63.

Strouse, S., Stein, I. F., and Wiseley, A.: The Accurate Clinical Study of Blood-Sugar, Bull. Johns Hopkins Hosp., 1915, xxvi, 211.

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The blood-sugar threshold by criterion 2, the usual one of renal permeability or glycosuria, has been given as 0.14%,<sup>1</sup> or 0.149 to 0.164%,<sup>2</sup> or even as high as "rather accurately between 0.17 and 0.18%."<sup>3</sup>

Whatever may be accepted as the permeability threshold in normals, unfortunately in diabetes this will often fail us, owing to the peculiar but not infrequent renal block, *i.e.*, values as high as 0.28%,<sup>4</sup> or 0.40%,<sup>5</sup> or even 0.50%,<sup>6</sup> and still no glycosuria.

<sup>1</sup> Martin, C. F., and Mason, E. H.: *Observations on the Starvation Treatment of Diabetes*, *Am. Journ. of Med. Sci.*, January, 1917, cliii, 50.

<sup>2</sup> Foster, N. B., and Davis, H.: *The Threshold of Renal Permeability to Glucose*, *Proc. Am. Soc. for Clin. Investigation*, 8th Annual Meeting, Washington, 1916, p. 28.

<sup>3</sup> Hamman, L., and Hirschmann, I.: *The Renal Threshold for Glucose*, *ibid.*, p. 27.

<sup>4</sup> Martin: *l. c.*

<sup>5</sup> Allen, F. M.: *The Role of Fat in Diabetes*, *Am. Journ. Med. Sci.*, March, 1917, cliii, 352.

<sup>6</sup> Joslin, E. P.: *l. c.*, p. 90.

#### BLOOD LIPOIDS PER CENT.

A lipid threshold has not been sought by criterion 2, lipuria, because of the scarcity of figures on urinary lipoids. From the hyperlipemia viewpoint, however, I was much interested to see that in Bloor's figures the only places where the lowest diabetic value remained higher than the highest normal were in the total fatty acid in whole blood and plasma for his series of 20 men. In these two columns, furthermore, the threshold was as beautiful as could be wished.

TABLE XI.

LIPID THRESHOLD SUGGESTED BY BLOOR'S FIGURES.

	TOTAL FATTY ACID	
	WHOLE BLOOD	PLASMA
Lowest diabetic value . . . . .	0.41	0.46
Highest normal value (men)	0.41	0.43

This observation is essentially supported by the series here presented in Table XII. As might be expected from the fact that this series is three times as large, the threshold is less absolute, *i.e.*, there is some overlapping in every column. As in Table XII, the most distinct division is in the total fatty acid in the plasma, where there is the minimum both of:

1. Overlap, and of
2. Exceptions, *i.e.*, diabetics below the threshold.

The next most distinct, again as in Table XII, is in total fatty acid in the whole blood.

From both these tables, therefore, total fatty acid in the plasma is the *nearest* determination; but the most *practical* in my opinion is the "total-fat" in whole blood because:

1. Total-fat is a single determination, while total-fatty-acid requires two determinations and a calculation.
2. Though the extent of the overlap in any case may be greater with total-fat than total-fatty-acid, still these overlap cases are rare.
3. Though the number of the overlap cases occurring in 124 specimens is greater with total-fat in whole blood than total-fatty-acid in plasma, 7% vs. 4%, the difference is not great enough to outweigh other advantages stated in 1. Incidentally, this low number of exceptions, 4%, may be emphasized as showing what a small proportion of diabetics have normal blood lipoids.

4. The total-fat threshold in whole blood is preferable to that in plasma since fewer diabetics fall below it, and also because of the greater simplicity of using whole blood, as mentioned elsewhere.

Accordingly, the threshold suggested, *i.e.*, by Bloor's fat-method on whole blood, would be the highest value reported by that method. It is at present 0.67% in the same investigator's series of a score of apparently normal people. This threshold is considerably less clear-cut than that for blood sugar, but still seems sufficiently definite to give promise of bedside value.

TABLE XII.  
LIPID THRESHOLD.

	TOTAL-FAT			TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL			GLYCERIDES			TFA L			L C			TOTAL LIPIDS		
	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.
Lowest values among 124 diabetic bloods ..	0.49	0.58	0.33	0.42	0.47	0.45	0.23	0.13	0.21	0.15	0.13	0.08	0.13	0.00	1.19	1.44	0.17	0.49	0.22	0.22	0.63			
Highest values among 20 normal bloods ..	0.67	0.78	0.42	0.42	0.47	0.45	0.33	0.26	0.48	0.25	0.31	0.24	0.20	0.15	1.45	2.70	1.14	1.03	1.26	2.60	0.82			
No. of diabetic values below highest normal	9	13	6	6	5	5	51	38	55	64											10			

No threshold is noticeable in either of the other two methods, lecithin or cholesterol, both of which are excessively unsatisfactory in both respects:

1. Extent of overlapping.
  2. Frequency of overlapping (38-64).
- None of the calculated values are helpful.

(To be continued.)

### Clinical Department.

VENTRAL FIXATION OF THE UTERUS, CAUSING DYSTOCIA. RUPTURED UTERUS FOLLOWING VERSION FOR TRANSVERSE PRESENTATION. HYS-TERECTOMY AND RECOVERY. REPORT OF A CASE.

BY L. E. PHANEUF, M.D., BOSTON,

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Assistant Visiting Obstetrician, St. Elizabeth's Hospital.*

Mrs. I. M. D., 34 years old, married 10 years, housewife, born in Prince Edward Island. *Family History*, negative. *Past History*: operated upon three years previously for appendicitis, and retro-position of the uterus; otherwise negative. *Menstrual History*, negative. *Marital History*: married ten years; one girl nine years old; twins, two boys seven years old; one stillborn child three years previously, at seven and a half months of pregnancy; no miscarriages. Labors, normal. Puerperia, normal.

The patient, seen at her home in consultation with Dr. Daniel J. Harrington, on July 12, 1916, was then in active labor. The position was transverse, the membranes ruptured, and the cord prolapsing. The cervix was soft and about half dilated; it was also directed backwards and hard to reach. The fetal heart rate was 120, sounds of fair quality. There was no marked elevation of the mother's pulse, although she complained of being very weak and tired. The measurements of the bony pelvis were normal.

The patient was removed to a near-by hospital, and prepared for delivery *per vaginam*. After being etherized and catheterized, on examination the cervix was found to dilate very easily, although it was abnormally high, the fundus being held firmly against the abdominal wall. The cord had now stopped pulsating.

The cervix was dilated manually, and offered no resistance to palpation. On introducing the hand in the uterus no contraction ring was found, and the uterus was not firmly contracted on the fetus.

A foot was easily brought down, and a slow breech extraction performed. There was no difficulty with the after-coming head, practically no suprapubic assistance being required. The baby's heart was not beating at birth.

The hand was introduced into the vagina for examination of the cervix, as is customary after versions. The uterus was found ruptured on the right, the rent being about eight inches long, extending to the posterior peritoneum of the broad ligament, but not through it. The patient was bleeding profusely.

A quick manual extraction of the placenta was done, and the patient quickly prepared for a coeli-tomy.

The abdomen was opened by an incision five inches long, over the old scar. The fundus of the uterus was found tightly adherent to the abdominal wall; there were also numerous omental adhesions about the uterus. The uterus was freed from surrounding adhesions, and the ovarian and uterine



vessels on the right were quickly clamped. A supra-vaginal hysterectomy with double salpingo-oöphorectomy was performed. The raw areas were quickly covered with peritoneum, and a gauze drain was passed through the vagina. The abdominal wall was sutured in layers, and a cigarette drain to the pelvis was allowed to come out at the inferior angle of the incision.

The patient was returned to her room in fair condition; she was put on the Murphy drip, and digalen mxv. was given every four hours hypodermically.

July 12, 1916, the noon temperature was 100, pulse 96. She complained of slight pain in the abdomen; 8 p.m. the same day the pulse was 96. July 13, 1916, the vaginal drain was removed; no bleeding present; slight distention, relieved by a high compound enema. July 15, 1916, cigarette drain removed; the patient feels well. July 21, 1916, stitches removed; the incision is healed except for the drainage tract, which is filling in fast. July 25, 1916, the patient out of bed on the 13th day after operation. August 1, 1916, *Discharge Note*—The abdominal incision is well healed, except for a small, superficial, granulating area in the drainage tract; no induration, no tenderness. The vaginal examination presents a healed slight laceration of the perineum; the vaginal drainage area is well healed; the cervix is high; there are no masses or areas of tenderness in the pelvis. August 1, 1916, discharged from the hospital. December 6, 1916, the patient reports that she is doing her housework, and feels well, except for an occasional backache. June 4, 1917, the patient has continued to improve, feels well, and does her housework without any discomfort.

#### CONCLUSIONS.

The operation which was performed for retro-position, three years previously, had apparently been intended to be a Kelly ventral suspension. The latter operation consists of suturing the fundus of the uterus to the parietal peritoneum, allowing a central ligament to form, which holds the uterus in a forward position. This latter procedure does not interfere with labor, when properly performed. At the present time the round ligament suspensions have largely replaced it.

The result in this case proved to be a ventral fixation, which represents an entirely different condition, and which practically always interferes with labor. In the operation for fixation, as the name implies, the fundus of the uterus is fixed to the abdominal wall.

Had the case been seen earlier in labor, or even before the rupture of the membranes, an abdominal Cesarean section would have been, in my mind, the operation of choice. This, however, was out of the question when the patient was seen, firstly, on account of the conditions noted above, and secondly, because she sent for her physician only when well advanced in labor, so that he recognized the prolapsed cord upon his arrival.

The fact that the patient was sent to the hospital for immediate delivery, the readiness with which she was prepared for a coeliotomy, with the subsequent saving of blood, were largely re-

sponsible for her easy convalescence, and complete and rapid recovery.

The writer has had the opportunity of witnessing and assisting Dr. James W. Markoe of the New York Lying-in Hospital, in a hysterectomy for ruptured uterus with satisfactory recovery. Dr. Ross McPherson in the *Bulletin* of the same institution, April, 1916, reports a case of spontaneous rupture of the uterus treated by hysterectomy. The patient also recovered.

### Medical Progress.

#### REPORT OF PROGRESS IN OPHTHALMOLOGY.

BY EDMUND W. CLAP, M.D., BOSTON.

##### HYPOPYON KERATITIS.

VERHOEFF discusses the various forms of treatment recommended for hypopyon keratitis. This is due most often to the pneumococcus and next in frequency caused by the diplobacilli. The author's method of treatment is as follows: With the patient lying down and a speculum in the eye, the ulcer is brought to face directly upward. With a Beer's knife incisions are made in the ulcer as deep as possible without entering the anterior chamber. A crucial incision is made in small ulcers; in large ones, in addition, radiating incisions are made. The infiltrated border of the ulcer is curetted with the point of the knife, and the surface of the cornea about the ulcer dried with small, dry swabs of sterile cotton. A concentrated Lugal's solution—iodine 25, potassium iodide 50, and water 100—is applied on a cotton-tipped toothpick to the ulcer, and after this is moistened a pool is formed in the ulcer and allowed to remain five minutes and then flushed out by a jet of boric acid solution. A rubber bulb with this solution should be in readiness in case the patient moves the eye, for the iodine solution injures the epithelium of the cornea. In cases of small ulcers the Lugal's solution is applied without making the incisions, depending on severity of the infection; when in doubt the incisions should be made, because when the ulcer heals no trace of them remains. In rapidly progressive cases Verhoeff makes a small puncture through the center of the ulcer with the Beer's knife. The puncture is not large enough to evacuate the hypopyon, and that remains to hold iris and lens away from the opening. This puncture causes some pain. Bandage, mercuric chlorid ointment, and atropine are used as after-treatment. If no improvement appears in seventy-two hours the treatment should be repeated. Forty-two cases were treated in this way. The process was checked in all but 5 cases, these having one-half to two-thirds of the corneal surface involved. The average age of the patients with small ulcers was 39 years; of the patients with larger ulcers, 50 years.

## ANISOCORIA.

Tarun examined 3610 patients as to inequality in size of pupils. He has the patient seated in a dark room at least two minutes and reflects the light from a plane mirror at a distance of one meter, rapidly shifting from one eye to the other. A difference in size of the pupil can readily be recognized. In refraction cases having no intraocular lesion, 18.54% were anisocoric and the left pupil larger in 54% of these. Of myopic cases the greater myopia had no especial influence on size of pupil. From statistics of various reports, the author finds that in 66% mydriasis is more frequent on the affected side in lung and pleural affections. From 18% anisocoria in normal eyes we pass to a maximum of 70% in Argyll-Robertson pupil.

The author concludes that inequality of the pupil is of little importance when the pupils are active to light and when there is only a slight difference in size, and in some cases even where a marked difference exists. But if there is reflex rigidity or sluggishness, then inequality in size is of great diagnostic value.

## TETANUS FROM WOUNDS OF THE EYE.

From a review by Thompson and Stephenson we gather the following about tetanus due to wounds of the eye. Goetz concludes that it is rare, but reports 50 cases in wounds of the eyeball, orbit, eyebrows, upper lid, lower lid and conjunctiva, in this order of frequency. Infection due to wounds by earth or by equine dejecta, rarely operative. Prognosis is grave in proportion to: (1) rapidity of onset, (2) depth and degree of contamination of wound (3) lateness of beginning serum treatment. Schneider estimates 60 cases observed between 1816-1916 and reports 2. Trismus, difficulty in swallowing and paralysis of cranial nerves are early symptoms, and diagnosis is often overlooked by the ophthalmic surgeon. Schneider cites 19 cases where the wound of entrance was the eyeball, and of these 9 were due to a blow from a whip. Four cases followed operations on the eye. Of the 19 cases only 3 recovered.

## TRACHOMA.

Gifford calls attention to occlusion of the inner end of the canaliculus in old trachoma. He tried 15 cases and found only one in which at least one of the canaliculi was not occluded. Generally all four are found to be in this condition, with from one to four dilated and containing pus. Occasionally a canaliculus is occluded at both ends with a dilated pus-holding portion between them. In such cases the tear-point may look normal, but if a dilator be passed into the canal and withdrawn pus will be seen to follow it. This condition often is supposed to be a dilated tear sac full of pus. There is so much else wrong with lids and cornea that the lachrymation is looked upon as a result of the irritable

cornea, and yet the recurrent corneal ulceration may be due to repeated infection from this source. The suppuration will cease if the canaliculi are slit up and kept open and a zinc colyrium used. It is difficult to maintain an opening into the tear sac, but there is no disadvantage in allowing the connection with the sac to remain closed. The nasal duct is not, as a rule, obstructed.

## SPASM OF ACCOMMODATION.

Paton reports two cases of that rare condition—functional spasm of accommodation. He does not mean by this the tonic contraction occurring in hypermetropia to compensate the refractive error, but a sudden development in one or both eyes of a high degree of apparent myopia, which disappears under atropine. It may be continuous or clonic, and may be associated with spasm of other ocular muscles. In one patient at 5 years of age there was 1.50 D. hypermetropia in each eye, with occasional convergent strabismus. At 15 there had developed divergent strabismus of the left eye, which was tenotomized. A few months later refraction was about —75 right and —2 left eye. Four months later myopia of —7 right and —9 left, and this varied. Under atropine, right —5, left —1, but the spasm of accommodation reappeared when atropine was omitted. Since then her eyes vary from slight spasm up to —9 or —10 D. The second case was in a soldier seen 5 months after a slight concussion of the brain.

## ASTEROID HYALITIS (T. B. HOLLOWAY).

Under this name Benson described snow-white globular opacities in the vitreous. These spots are globular, many ellipsoid and dull white, not shining like cholesterolin. A few have a projecting spur, while white strands are also noted. The movement of these opacities is sometimes very slight, sometimes extensive on movement of the eye, but they do not settle to the bottom of the vitreous, but return to their original positions. They may be in certain areas or the whole vitreous may be studded with them. Vision is affected very little, even where the vitreous is abundantly filled with these opacities. They do not seem to be cholesterolin, though they may be formed at some stage of the same process that produces cholesterolin. Synchrony scintillans is a condition of advanced years ascribed to diseases of the liver, arthritis, alcoholism, syphilis and arteriosclerosis. It has been found with uveitis, affections of retina, changes in optic nerve, glaucoma, and traumatic detachment of the retina. Among the reports of synchrony scintillans several cases of this snowball type are reported, once with the bright cholesterolin crystals present, too. The author reports four cases and says probably other cases have been grouped with true synchrony scintillans. The etiology is unknown, but apparently hypercholesterolemia has no relation to it.

## HETEROCHROMIA IRIDIS (E. C. ELLETT).

This is a condition in which the whole iris of one eye is of the same color, but the color is different from that of the other eye. This condition, not rare, usually in brunettes, is noticed at birth or before maturity in the majority of cases. The difference in color may arise either from absence of pigmentation on one eye or from destruction of pigment through some pathologic process. The lighter colored eye is the one almost without exception where the pathologic process occurs. These changes are: (1) low-grade cyclitis, limited to vitreous opacities and occasionally deposits on back of cornea; (2) development of cataract; (3) occurrence of glaucoma simplex rarely. The underlying cause has been supposed to be a lesion of the cervical sympathetic, but experimental work has not shown much influence of the sympathetic on the eye, nor have injuries of the cervical sympathetic been followed by this condition. Of course a chronic uveal inflammation would account for the change in color of the iris, and pathological examination has shown many cases to be due to chronic iridocyclitis. Cases of uveitis with increase of tension are sometimes helped by atropine, but others occur where this drug increases the tension. The author reports in detail 12 cases, 5 of them with glaucoma.

## MYOPIA.

From the *British Journal of Ophthalmology* we take the following review of work on myopia. Koster thinks school myopia is caused by heredity and over-exertion. These eyes are suffering from a chronic sight chorio-retinitis. By effort of accommodation the eyes are made hyperemic and the posterior part of the globe becomes ectatic. Pollock employs prolonged use of atropine in treating myopia, and has observed not only no increase in many cases, but also some cases of actual decrease in the myopia. On the other hand, Sidler-Huguerin thinks that myopia cannot be arrested nor its degenerative changes stopped. His study of 4000 myopia patients revealed disease of the macula in 218, and of these the myopia was less than 10 D in 49. Corneal maculae were found in 187. The writer thinks that myopia gradually increases, whatever we do to combat it, and that full correction is not always capable of preventing the increase. From radiographs he has satisfied himself that there is no close relationship between the contents of the orbit on one side and the refraction of the eye on the same side. He reports a series of 150 anisometropes, each of whom used practically only one eye. These patients gradually became more and more myopic in the worse eye, which was not used. He considers heredity as the most important factor in myopia, and thinks the only remedy is in proper selection of individuals for marriage.

## END-RESULTS IN INTERSTITIAL KERATITIS.

Derby examined 96 cases of interstitial keratitis with regard to the end-result, and 94 of these had the disease in both eyes. Except in a very few instances the inflammation had come to an end at least two years previously, so that the visual results may be regarded as reasonably permanent. Corneal opacity of greater or less density was seen in 168 eyes, while in 14 none was observed. Of 186 eyes examined for blood vessels in the cornea 171 showed them. Posterior synechiae were present in 62 eyes. In 4 eyes slight opacity of the lens was left. Vitreous opacities were seen in 11 eyes, but in 38, either from contracted pupil or corneal scars, this examination could not be made. In 148 eyes 81 showed lesions of chorioid and retina, mostly disseminated rounded lesions in the equatorial region. As to vision, the patient, usually a child, may have one good eye, so that statistics as to the number of eyes defective may be misleading. From the standpoint of education, 24 children would have the same chance as a normal child; 25 more could study normally, but might be handicapped in choosing an occupation; 20 or possibly more would have to be educated in special classes or in institutions for the blind, as certainly the remaining five would be. Of course myopia may develop later; it was noted in 19 of 80 cases. Igersheimer's statistics are worse than this; 40% of his cases had a vision of less than 2/10. Derby believes the great majority of cases of interstitial keratitis are due to inherited syphilis, and that recurrences do occur, and that specific treatment should be used for the future good of the patient, if not to control the eye disease.

## EFFECTS OF RADIANT ENERGY ON THE EYE.

Verhoeff and Bell have made an exhaustive experimental investigation into the pathological effects of radiant energy on the eye. This valuable work does not lend itself to abstraction but should be read in full, but some conclusions of interest to the ophthalmic surgeon may be quoted. The authors set out to discover what pathological effects can be produced in the structures of the eye by exposure to artificial or natural sources of light, viz., by radiant energy of medium wave-lengths from the infra-red to the ultra-violet. The authors show that no injury to the retina can occur from ultra-violet light, even from the most severe exposures. Thermic effects from any source are not to be considered as no one could bear extreme heat radiation on the external eye long enough to produce damage. Using sources of light employed for practical lighting, but of immensely greater intensity than would ordinarily be used, they found no chance of damage to the retina. The heavy arcs for welding; furnaces and short circuits, and possibly searchlights, present the only danger from the standpoint of thermic ef-

fects. No sources used for lighting can be called dangerous. Brilliant sources of light are disagreeable and produce temporary scotomata, disturbances of color vision, annoying after-images and fatigue, but as regards definite pathological effects or permanent impairment of vision from exposure to luminous rays, nothing of a positive nature was found, either clinically or experimentally. The injury to the retina in eclipse blindness is entirely thermic, due to concentration of solar energy by the refracting system of the eye, and is not due to ultra-violet rays. Glass-blower's cataract is due not to ultra-violet light, but probably to the overheating of the eye as a whole, with consequent disturbed nutrition of the lens. The lens screens the retina from abiotic radiations, so that protective glasses for this purpose are superfluous. The question of protective glasses for the ordinary individual is answered by choosing those best adapted to obviate the sensations arising from too strong illumination; any glass that reduces light will do, but preferably a glass that transmits light chiefly in the middle of the spectrum for which the eye is customarily focused. The color of the glass is of little importance. Glasses absorbing at both ends of the spectrum so as to bring the strongest light in the region of greatest luminosity, viz., the yellow-green, are perhaps to be preferred.

### Book Reviews.

*The Medical Clinics of North America.* July and September, 1917, pp. 193 and 269. Philadelphia and London: W. B. Saunders Company.

The initial number, July, 1917, of this new publication in the field of medical clinics supersedes the older Medical Clinics of Chicago, the final number of which appeared in May, 1917.

The plan of this new periodical is unique in that it calls for a bi-monthly magazine, each number to contain a collection of papers and post-graduate clinic from one of the great medical centers of the country.

The first, the Johns Hopkins Number, contains contributions by Doctors Janeway, Barker, Mosenthal, Fletcher, Hamman and Brown. The papers cover a wide range of internal medicine, and the subjects are handled in an essentially practical and informal manner.

Dr. Janeway presents a short clinic on "postural albuminuria," which is of very distinct value. The discussions of hypertension by Dr. Mosenthal and Dr. Hamman present the modern conception of this condition in a particularly sane and interesting manner.

Dr. Barker in his clinic on "atrial fibrillation" gives an excellent discussion of the sub-

ject, including prognosis and treatment. Against the commoner conditions with which the number is mainly concerned, two very unusual conditions presented by Dr. Hamman, one, "dermoid cyst of the mediastinum," two, "Millyroy's Disease" stand in contrast.

The number closes with some gastro-intestinal notes by Dr. Thomas R. Brown concerning "gastroptosis," "chronic appendix," and the medical after-care of surgical patients following abdominal operation.

A gratifying feature of this excellent number is the incorporation in some of the papers of a brief and up-to-date bibliography.

The September, Philadelphia, Number contains papers and clinics from sixteen authors, drawn from various Philadelphia hospitals and clinics. It is impossible to comment on all the interesting material, but attention may be called to the contribution of Dr. Pancoast on "The Diagnosis of Pulmonary Tuberculosis by the Roentgen Ray," well illustrated by skiagrams as an excellent discussion and a clear statement of what x-ray may be expected to do, and also its limitation in this condition.

Dr. McCrae's paper on "Aortitis" calls attention to the importance of infectious diseases as a frequent cause, and emphasizes the two great tendencies to regard syphilis as the sole etiological factor.

Dr. Schamberg contributes a short but comprehensive paper on "The Causes of Reaction after Salvarsan."

Dr. Kolmer's discussion of "The Diagnostic Value of Examination of the Cerebrospinal Fluid" describes clearly the worth-while tests and their significance.

On the whole, it is fair to say that the excellence of the first number has been maintained, and if the same standard is carried out, the series will make a valuable addition to this class of medical publication.

*The Surgical Clinics of Chicago.* October, 1917. Vol. I, No. 5. With 84 illustrations. Published bi-monthly. Philadelphia and London. W. B. Saunders Company.

This paper volume, in the usual shape, contains 100 pages, and cases from 16 surgical clinics in Chicago; it includes the well-known names of Bevan, Ochsner, Ridlon, Halstead, Harris, Wyllys Andrews, Phemister, Percy, Beck, Eisendrath and Speed, and other equally able, though possibly not so widely known, operators.

Dr. Ochsner finds it well worth his while to write on the somewhat plebeian subject of "Varicose Veins," and presents a very good discussion on it; Dr. Ridlon writes on "Hip Disease," and Dr. Bevan on "Tumors of the Breast, Benign and Malignant."

The volume is well illustrated and worthy of study.

## THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, JANUARY 10, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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## SHELL SHOCK AND THE AMERICAN ARMY.

No medico-military problems of the war are more striking than those growing out of the extraordinary incidence of mental and functional nervous diseases ("shell shock"). Together, these disorders are responsible for not less than one-seventh of all discharges for disability from the British Army, or one-third, if discharges for wounds are excluded. A medical service newly confronted, like ours, with the task of caring for the sick and wounded of a large army, cannot ignore such important cause of invalidism. By their very nature, moreover, these diseases endanger the morale and discipline of troops in a special way, and require attention for purely military reasons. In order that as many men as possible may be returned to the colors or sent into civil life free from disabilities which will incapacitate them for work and self-support, it is highly desirable

to make use of all available information as to the nature of these diseases among soldiers in the armies of our allies, and as to their treatment at the front, at the bases, and at the centers established in home territory for their "reconstruction."

England has had three years' experience in dealing with the medical problems of the war. During that time, opinion has matured as to the nature, causes and treatment of the psychoses and neuroses which prevail so extensively among troops. A sufficient number of different methods of military management have been tried to make it possible to judge of their relative merits.

Although an excessive incidence of mental diseases has been noted in all recent wars, it is only in the present one that functional nervous diseases have constituted a major medico-military problem. As every nation and race engaged is suffering severely from these disorders, it is apparent that new conditions of warfare are chiefly responsible for their prevalence. None of these new conditions is more terrible than the sustained shell fire with high explosives which has characterized most of the fighting. It is not surprising, therefore, that the term "shell shock" should have come into general use to designate this group of disorders. The vivid, terse name quickly became popular, and now it is applied to practically any nervous symptoms in soldiers exposed to shell fire that cannot be explained by some obvious physical injury. It is used so very loosely that it is applied not only to all functional nervous diseases, but to well-known forms of mental disease, even general paresis. If all neuroses among soldiers were included in these groups the use of the term "shell shock" might be defended. But many hundreds of soldiers who have not been exposed to battle conditions at all develop symptoms almost identical with those in men whose nervous disorders are attributed to shell fire. The non-expeditionary forces supply a considerable proportion of these cases.

The medical statistics of the war are as yet untabulated. Even if the records contained the information desired it would be very difficult to state the prevalence of the neuroses on account of the defective nomenclature employed. It is doubtful if there is another group of diseases in which more confusion of terms exists. Nervous or mental symptoms coming to attention after the soldier has been exposed to severe

shell fire are almost certain to be diagnosed as "shell shock," and yet when such patients are received in England, well-defined cases of general paresis, epilepsy, or dementia precox are often found among them. This source of confusion tends to swell the number of cases reported under the term "shell shock," but there are many other sources of error which tend to diminish the apparent prevalence of the war neuroses. It is the belief of those who have made an effort to ascertain the prevalence of the war neuroses that the rate among the expeditionary forces is not less than ten per thousand annually, and among the home forces not less than three per thousand.

The experience of the British "shell shock" hospitals emphasizes the fact that the treatment of war neuroses is essentially a problem in psychological medicine. While patients with severe symptoms of long duration recover in the hands of physicians who see but dimly the mechanism of their disease, and are unaware of the means by which recovery actually takes place, no credit belongs to the physician in such cases and but little to the type of environment provided. In the great majority of instances the completeness, promptness and durability of recovery depend upon the insight shown by the medical officers under whose charge the soldiers come, and their resourcefulness and skill in applying treatment.

The resources at the disposal of the physician in treating the war neuroses are varied. The patient must be reëducated in will, thought, feeling, and function. Persuasion, a powerful resource, may be employed, directly backed by knowledge on the part of the patient as well as the physician of the mechanism of the particular disorder present. Indirectly, it must pervade the atmosphere of the special ward or hospital for "shell shock." Hypnotism is valuable as an adjunct to persuasion, and as a means of convincing the patient that no organic disease or injury is responsible for his loss of function. Thus, in mutism, the patient speaks under hypnosis or through hypnotic suggestion, and thereafter must admit the integrity of his organs of speech. The striking effects of hypnotism in the removal of symptoms are somewhat offset by the fact that the most suggestible who yield to it most readily are particularly likely to be the constitutionally neurotic. A mental mechanism similar to that which produced the disorder is being used in such cases to bring about a cure.

The experience in English hospitals has demonstrated the great danger of aimless lounging, too many entertainments and relaxing recreations, such as frequent motor rides, etc. It must be remembered that shell shock cases suffer from a disorder of will as well as function, and it is impossible to effect a cure if attention is directed to one at the expense of the other. As Dr. H. Crichton Miller has put it, "Shell shock produces a condition which is essentially childish and infantile in its nature. Rest in bed and simple encouragement is not enough to educate a child. Progressive daily achievement is the only way whereby manhood and self-respect can be regained."

It is evident that the outcome in the war neuroses is good from a medical point of view and poor from a military point of view. It is the opinion of all those consulted that, with the end of the war, most cases, even the most severe, will speedily recover, those who do not being the constitutionally neurotic and patients who have been so badly managed that very unfavorable habit-reactions have developed. This cheering fact, however, brings little consolation to those who are chiefly concerned with the wastage of fighting men. The lesson to be learned from the British results seems clear,—that treatment by medical officers with special training in psychiatry should be made available just as near the front as military exigency will permit, and that patients who cannot be reached at this point should be treated in special hospitals in France, until it is apparent that they cannot be returned to the firing-lines. As soon as this fact is established, military needs and humanitarian ends coincide. Patients should then be sent home as soon as possible. The military commander may have the satisfaction of knowing that food need not be brought across to feed a soldier who can render no useful military service, and the medical officer may feel that his patient will have what he most needs for his recovery,—home and safety and an environment in which he can readjust.

Although it might be considered more appropriately under the heading of prevention than under that of treatment, the most important recommendation to be made is that of rigidly excluding insane, feeble-minded, psychopathic and neuropathic individuals from the forces which are to be sent to France and exposed to the terrific stress of modern war. Not only the medical officers but the line officers interviewed

in England emphasized, over and over again, the importance of not accepting mentally unstable recruits for military service at the front. If the period of training at the concentration camps is used for observation and examination, it is within our power to reduce very materially the difficult problem of caring for mental and nervous cases in France, increase the military efficiency of the expeditionary forces, and save the country millions of dollars in pensions. Sir William Osler, who has had a large experience in the selection of recruits for the British Army and has seen the disastrous results of carelessness in this respect, feels so strongly on the subject that he has recently made his views known in a letter to the *Journal of the American Medical Association*, in which he mentions neuro-pathic make-up as one of the three great causes for the invariable rejection of recruits. In personal conversation he gave numerous illustrations of the burden which the acceptance of neurotic recruits had unnecessarily thrown upon an army struggling to surmount the difficult medical problems inseparable from the war.

Neuroses are very common among soldiers who have never been exposed to shell fire, and will undoubtedly be seen frequently among non-expeditionary troops in this country. In England nearly thirty per cent. of all men from the home forces admitted to one general hospital were suffering from various neuroses. Most of these men were of very neurotic make-up. Many had had previous nervous breakdowns. Fear, even in the comparatively harmless camp exercises, was a common cause of neurotic symptoms. Heart symptoms were exceedingly common. The same experience in our own training camps can be confidently predicted.

The imminence of this problem in our country at the present time lends interest to the "War Shock" program of the annual conference of the Massachusetts Society for Mental Hygiene, held in Tremont Temple on Wednesday, January 9, in the afternoon, program of which appeared in last week's issue of the JOURNAL.

#### STANDARDIZATION OF SCHOOL HYGIENE.

THE Massachusetts State Department of Health has made a thorough investigation of the present status of medical supervision of school

children throughout the state. A report of this investigation appears in the November number of the *Public Health Bulletin*.

"The importance of child hygiene has long been recognized in Massachusetts by the few, as illustrated by the report of the commission appointed by the Governor of the Commonwealth in 1849 to make a sanitary survey of the State. Their report, made the following year, contains these specific recommendations:

XVIII. We recommend that, in erecting schoolhouses, churches, and other public buildings, health should be regarded in their site, structure, heating apparatus and ventilation.

XXVI. We recommend that measures be taken to ascertain the amount of sickness suffered among the scholars who attend the public schools and other seminaries of learning in the Commonwealth.

In 1875 and following years Dr. Henry P. Bowditch of Boston made elaborate studies of the physical growth of school children in Boston, which appear in the annual reports of the State Board of Health for 1877 and 1879.

The first systematic work in the line of school hygiene in Massachusetts was inaugurated in Boston in 1894 under the term 'medical inspection of schools.' An effort to control an outbreak of diphtheria was the immediate occasion for the beginning of this work.

Brookline began similar work the same year. Work was begun in Marblehead in 1895, while in Beverly, Cambridge and Gloucester work was inaugurated in the following year.

Interest in medical inspection gradually increased, the work being taken up in a community here and there until 1906, when the Legislature passed a bill requiring school inspection to be carried on throughout the State."

With the spread of this work and the increasing amount of attention devoted to it, the term "medical inspection" has come to be regarded as too narrow, since many other things are included in conserving the health of school children beside sickness; hence the term "school hygiene," as comprehending all things which influence the health and consequently the welfare and efficiency of the pupil, has come into use.

School hygiene work is carried on by the boards of health in eighteen cities and in some half dozen towns. Elsewhere it is in the hands of the school authorities. The number of school physicians employed seems to be determined without reference to the number of pupils, since a single physician has under his care from 10 to 7000 pupils. In 215 communities the school physician's salary does not exceed \$100 per year, in the majority of instances much less, while seven towns pay nothing. Sixty-two com-



munities pay in excess of \$200 but not to exceed \$300. Salaries above this amount are few. In the great majority of places for which information is at hand the amount of time devoted to school work is not more than one to two hours per week. The examination of the pupils is more largely an inspection, and includes the skin (for skin diseases and pediculosis), the nose and throat (for tonsils and adenoids), and perhaps the teeth, though they are infrequently mentioned. Sixty communities employ school nurses, either on a full-time or part-time basis.

"This report demonstrates beyond question the almost entire absence of uniformity in school hygiene work and the lack of any standard of such work as it is carried out in Massachusetts. The value of this work, however, when conscientiously and thoroughly carried out, is well recognized and established.

At the present time there is nowhere lodged the authority, either in the State Board of Education or in the State Department of Health, to establish standards, even minimum standards, for the carrying on of school hygiene work. The matter is left wholly to the individual boards of health or school committees. Hence, though some communities are doing excellent work, many others are doing the work in a more or less perfunctory manner, failing to achieve the maximum benefits of school hygiene work.

Under such circumstances it becomes an almost hopeless task to secure even a minimum standard of work in school hygiene, or to attempt to secure an approach toward more uniform practice and efficiency.

School hygiene concerns itself with:

1. The location, the housing and the equipment of schools so far as conditions affecting the health of the pupils are concerned.

2. The health, the physical condition, of the pupil himself, including inspection and examination to determine the presence of defects, if any, and the devising of means for their relief.

3. The teaching of hygiene, including especially recent knowledge as to the transmission of communicable diseases, the importance of proper health habits, etc.

To secure maximum efficiency in school hygiene work there should be:

1. Provision for determining the healthfulness of sites and plans for school buildings, and for their subsequent regular inspection.

2. Provision for minimum requirements as to the inspection and examination of school children, and for the supervision of such work.

3. Provision for the extension, by the board of health, as a health measure, of similar inspection and examination to private and parochial schools.

4. Provision for the employment of school nurses in addition to school physicians in order to increase the efficiency of school work.

5. Provision of means to aid smaller communities in maintaining such school hygiene work, as is now made in aiding the metro employ school superintendents.

6. Provision for the prescribing of standards of teaching hygiene in the schools and adequate supervision of the same.

Such measures would make possible much progress in health work in this State, would greatly increase its efficiency, and would eventually repay many times its cost in added health, comfort and productiveness of our people."

## THE LIMIT OF RECOVERY IN HEMIPLEGIA.\*

ANY attitude towards our patients which is in the direction of optimism, provided always that such optimism is not altogether unjustifiable, is to be fostered, for its favorable effect on the patient's psyche, if for no other reason. We turn, therefore, with pleasure to the recent efforts to extend the limits of recovery in hemiplegia. It has been generally held in the past that, following the hemorrhagic insult, there was a paralysis affecting all the movements of one side, next an improvement, progressing in some cases to an almost complete recovery, while in other cases there was very little change for the better.

It is pretty generally agreed, anyway, that after a time, varying as six months, one year, a year and a half, etc., we must look upon the *status quo* as the maximum of improvement. Thus many cases seem after a year or so to be doomed to complete hemiplegia, monoplegia, or perhaps contractures or athetoid movements.

But lately the gloom of this picture has become illumined by rays of hope. It has been asserted that, in a great many of these long-standing cases, particularly when treatment has been scant, there is a possibility of great improvement, amounting in some instances substantially to restoration of function. This theory, once evolved, was apparently proved with monkeys, and then extended to human patients, where encouraging results have been reported.

To review a typical case, we have first the rupture of a cerebral vessel with hemorrhage into the cortex, destroying part of the brain tissue.

\* See "The Possibility of Recovery in Long-standing Hemiplegias," by S. I. Franz, Mildred Scheetz and Anita Wilson, *Journal American Medical Association*.

Not to go too exhaustively into the pathology, we will say that there is an extravasation of blood over the motor area, causing a hemiplegia. Later on, with the absorption of the blood-clot, much of the pressure is removed, and the individual synchronously recovers part of the function of the affected side. There remains, however, some actual destruction of cerebral tissue which is not and cannot be replaced, and which fixes a limit to recovery unless we are to suppose one of two things,—a compensatory adaptation of other areas on the same side, or an assumption from the sound side of attributes of the diseased side,—a rather incredible hypothesis.

Whether or not either of these things occurs cannot be definitely stated at this time. Certainly it has been demonstrated that cases of several years' standing can be taken in hand and by reëducation be given back a large amount of function supposedly lost. This may, of course, be due to the fact that these hemiplegics from one cause or another do not always obtain treatment *secundum artem*. Either the patient neglects medical advice entirely after the first shock, or he neglects the massage and use of the affected side, which is so necessary. The result is a limb only, we will say about 30% potent, the 70% subnormality being 20% actual destruction of cortical tissue and 50% neglect. Now if we take such a patient in hand we can get back the 50% of use, making the limb useful to 80% of its normal, which contrasted with the former condition, seems almost like recovery. But it is not really recovery, and what has really been done has been to show that the limit of recovery has hitherto been unnecessarily restricted.

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#### INDIVIDUAL INCOME TAX RETURNS.

At least 350,000 individuals residing in Massachusetts will be required, during the months of January and February, 1918, to make returns of their income for the year 1917 to the Federal Government. Every unmarried person who had an income of \$1000 or more during the year 1917, and every married individual living with wife or husband who had an income of \$2000 or more for the year 1917 must make this return on or before March 1, 1918. Inasmuch as the great majority of people required

to make this return of income are not thoroughly acquainted with the requirements of the law as passed by Congress on October 3, 1917, the Income Tax office is planning a campaign of publicity in order that they may become acquainted with the provisions of the law, and in addition plans to have, during the months of January and February, approximately one hundred federal income tax experts stationed throughout the State, in order that they may give advice and make out returns, without any cost to the taxpayer.

The public will be notified later of the dates upon which the income tax men will be in the different towns and cities throughout the State, and should await their coming before attempting to make out their returns. The hours of these men will be so arranged that individuals who are employed throughout the day will be given an opportunity to consult them and make returns out under their supervision.

The Income Tax Office at Boston has been overwhelmed with correspondence incidental to the new war revenue bill of October 3, 1917, since the date of its enactment. It is urgently requested that the public refrain from writing to this office for returns or for interpretations of the law, as correct interpretations of the law will be furnished through the press and by the income tax men, and blank forms upon which the individual taxpayers will make returns will be at convenient points for distribution in the towns and cities of the State in the early part of January.

Taxpayers who have made income tax returns for previous years will, as heretofore, receive their blanks through the mail.

Watch the papers for further information.

JOHN F. MALLEY, *Collector*.

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#### MEDICAL NOTES.

NEW FOOD CONSERVATION MOVEMENT.—Recently, at the home of Mr. Adolph Lewisohn, New York City, there was organized a new movement to conserve food, homes, health and woman power, during war conditions and after. The movement, to be known as the American Cooked Food Service, has originated with a group interested in the social significance of a new method of furnishing cooked meals to homes, from central stations scattered throughout the city. The incorporators are Mrs. Herbert L. Satterlee, Mr. Adolph Lewisohn, and Mrs. Charles H. Sabin. Associated with them

are Mrs. William Pierson Hamilton, Mr. William S. Curtis, Mrs. Charles B. Alexander and Mrs. Charles H. Senff.

The officers elected were: president, Miss Jessie H. Bancroft; vice-president, Mr. Adolph Lewisohn; secretary, Mrs. William G. Shailer; treasurer, Dr. Belle J. Macdonald. Other directors are Mrs. Edgerton L. Winthrop, Jr., Mrs. Herbert L. Satterlee, and Mrs. Ransom S. Hooker. Mrs. Alice McKay Kelly, now organizing Red Cross canteens in Italy, is to be field secretary, and Mrs. Emma Waldron Davis, executive.

The movement has the personal endorsement of Mr. Hoover, and in observing all war needs will have the advantage over theoretical instruction of placing the actual approved and prepared food on the table. Trained dietitians will see that balanced menus prevent underfeeding during the war stress, and will attend to special dietary needs. An official consulting board, to give assistance and advice on various technical and nutrition problems will include Mr. Herbert L. Satterlee, Dr. Graham Lusk, Dr. Henry Dwight Chapin, Dr. S. Josephine Baker, Dr. C. E. A. Winslow, Dr. S. Adolphus Knopf, Mr. Cyrus C. Miller, Dr. Thomas D. Wood, Mr. George L. Bennett, Mr. Frederick S. Crum, Dr. G. Reese Satterlee, Dr. Sumner Shailer. Professor Irving Fisher, Mrs. John E. Milholland and Mrs. Bertha L. Grimes.

The first station will be opened in a few weeks at 213 West 79th Street, with a motor service extending over a two-miles radius. The food will be carried in insulated containers that keep it hot for several hours. The movement is designed to save the independent consumer by means of a centralized service from commercial exploitation for his food supplies, and to keep together homes that otherwise might disintegrate because of the draft of women, domestic workers and house mothers, into industrial and other war service. Similar movements have been started in London to meet war conditions.

**HOSPITAL BEQUESTS.**—By the will of the late Louis Summerfield of Boston the Boston Floating Hospital is to receive the sum of \$500.

By the will of the late William H. White of New York, St. Luke's Hospital is named as a residuary legatee and will receive a sum of from \$500,000 to \$1,000,000.

**AMERICAN CONGRESS ON INTERNAL MEDICINE.**—The second scientific session of the American Congress on Internal Medicine was held in Pittsburgh, Pa., on December 27 and 28. The subject for discussion on the first day was "The Roentgen Rays in Internal Medicine." On the second day Dr. William H. Park of New York spoke on "The Communicable Diseases in Modern Warfare and Their Prevention."

**CARNEGIE INSTITUTION EMBRYOLOGICAL DEPARTMENT.**—The following letter has been received regarding the continuation of embryolog-

ical study by the Carnegie Institution, following the death of its director, Dr. Franklin P. Mall of Johns Hopkins University:

"This is to announce the death, on November 17, of Professor Franklin P. Mall, under whose direction this laboratory and its plan of work were established. The loss which this means to the progress of human embryology is very great; it is a loss in which the medical profession, and you, especially, as one of our correspondents, will be deeply concerned.

At the same time we wish to state that this great blow to our department is to be met by the redoubling of our efforts. The collection of human embryos which, through the unceasing zeal of Dr. Mall, has become by far the largest in existence, is to be still further increased, and generous provision has been made by the Carnegie Institution of Washington whereby the embryological studies based upon the collection are to be carried on without interruption. Our success in this will depend in part upon you, and we earnestly request that you continue to send us every embryo and every fragment of abortion material that may come into your hands.

Yours very truly,

GEORGE L. STREETER, *Acting Director.*"

**LONDON DEATH RATES.**—Statistics recently published show that the death rate for the City of London for the month of October, 1917, was 12.5 per thousand inhabitants. The highest rate was in the district of Finsbury, which had a rate of 19.8, and the lowest in Hampstead, which had a rate of 9.

#### WAR NOTES.

**AUSTRIAN BATH TRAIN.**—Colonel Joseph H. Ford gives the following description in the *Military Surgeon* of a bath train in use in the Austro-Hungarian Army:

"In addition to the usual locomotive for transport, it had another altered to pump water and supply steam for disinfection and for warming the bath water. Two living cars housed the personnel (1 second lieutenant, 6 train crew, 17 technical staff). Five store cars carried soap, towels, brushes, 10% naphthalin ointment in vaseline, 10,000 clean clothing outfits for men to wear while their own was being disinfected. Water for two days was carried in two tank cars, each holding 40 tons. There were three disinfecting cars, of which one disinfected underclothing at 103° C. in half an hour; the other two disinfected furs, overcoats, boots, etc., with formalin at 60° C. in six hours. There were five cars in the bathing section. Men undressed in the center car, each putting his kit in a sack, taken away at once for disinfection, and they themselves passed into the next car either

way, where each picked up soap and towel and washed himself. The bath car had a 25-ton tank on the roof, and 30 shower douches allowed seven gallons of water at 98° F. to fall on each of the 30 bathers in five minutes, by the end of which time he was supposed to be clean. The car was lighted by numerous frosted windows or by overhead electric lights. The man then dried himself and rubbed himself over, especially the hairy parts, with the 10% naphthalin ointment and passed into the next car, where he dressed himself in the outfit laid ready for him, remaining there till his own clothes were disinfected and he could change into them. Each train was estimated to bathe 1400 to 2000 men daily, but one, says Colonel Ford, had been known to deal with 3600. Sometimes the bathing train had a laundry attached; more usually the laundry was independent, and carried by a motor lorry with trailer. It had a washing machine, centrifugal drier, drying closets, and a mangle; with 23 men as staff, they were expected to wash a ton of dirty clothes in a day."

**U. S. MEDICAL DEPARTMENT TO USE MOVING PICTURES.**—One of the most important and most progressive educational innovations just announced, is the establishment of a new sub-division of the Surgeon-General's Office in conjunction with the Surgeon-General's Library and Army Medical Museum, to furnish moving pictures or slides of camp activities relating to the conduct of work in the Medical Department, and the establishment of a suitable repository for these valuable pictorial data.

The repository will be for the accommodation of positives or negatives of all important military-medical films or slides, which are to be available for instruction purposes in camps or cantonments of the army and for instruction in the medical schools of the country. These films and slides will be loaned for use in conjunction with lectures and other courses of study in medical schools and for educational uses in the training camps and cantonments. It is the plan of the Surgeon-General's Office to supplement the courses of instruction given under the direction of the Medical Department in officers' training camps, as well as in the National Guard and National Army camps, with these pictures.

As it has been repeatedly demonstrated that students attain a higher percentage where courses are supplemented pictorially, this innovation, planned and put into operation by the Surgeon-General's Office, will be appreciated as of value, not only in securing better results, but in making the courses doubly interesting.

The Surgeon-General's Office seeks the cooperation of the medical profession in securing access to negatives of unusual cases in every branch of surgery not now possessed by the Library of Moving Pictures of the Surgeon-General's Office, and would appreciate the donation of positives where possible.

The new branch is under the direction of Col. William O. Owens, curator of the Surgeon-General's Library and Army Medical Museum, Seventh and B. Streets, S.W., Washington, D. C., to whom correspondence may be addressed.

**TUBERCULOSIS AND THE WAR.**—The experience of England and Wales with respect to tuberculosis during the past few years is practically identical with that of the continental countries engaged in the war, namely, that the disease has increased, both in prevalence and in fatality. A table accompanies an article on this subject published in a recent number of *The Lancet*, showing that, comparing the experience of 1913, the last complete year before the war, with subsequent years, the deaths from pulmonary tuberculosis increased by 1582 in the year 1914, by 4621 in 1915, and by 4490 in 1916, the third year of the war.

In commenting on the increased mortality shown in this table, Newsholme says: "Men in the Army and men and women in industrial employment, notwithstanding the efforts to minimize these results, have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease. A large number of unrecognized or partly recovered consumptives have entered the Army or have been employed at high wages in munition and other works. In many instances there have been overwork and excessive exposure to irritating dust. Commonly, also, owing to great migrations of military and civil population, there has been overcrowding under conditions unfavorable to health. These are the outstanding facts. They will need to be further considered in the light of the current year's experience.

"The experience in this country appears to coincide with that of the continental countries engaged in the present war. In all of them, so far as can be gathered from official information, tuberculosis appears to have been more rife and more fatal than prior to the war. It is proper to state that this unfavorable record would almost certainly have been worse but for the organized efforts to improve housing conditions in areas the population of which has been swollen by war work, and especially for the efforts made by the Government to secure improved conditions of work for munition workers, as well as to cope with the special housing difficulties which have arisen. I may draw attention, furthermore, to the fact that, notwithstanding the increase in the population of England and Wales in the interval, the deaths from pulmonary tuberculosis were fewer than in so recent a year as 1902."

**SOAP TREATMENT OF WOUNDS.**—From France comes the report of the use of soap in the treatment of wounds. The white soap of Marseilles (Castile soap) was used and the wound washed, where possible, with gauze swabs wet with the soap solution. The lack of friction permits such

devices to slide over the surface of certain classes of wounds without irritation. In other cases irrigation has been effected by means of an elevated reservoir. This treatment is continued until the results are free from pus or extraneous material, and then a sort of "embalment"—improper term probably, but illustrative—is effected with the soap. Cloths, with a 20% solution of soap liquor are rolled and manipulated in the hands till a thorough distribution of the soap through the gauze is effected. This process is important in the eyes of the technicians, for it produces a dressing filled with air bubbles which is in effect a very fine sponge. By careful manipulation a coating of soap may be placed over every part of the wound, which may be even a centimeter in thickness. This may be covered with a moist layer of absorbent cotton, and a bandage will hold it in place. Such a dressing will last a couple of days.

**RED CROSS TUBERCULOSIS HOSPITAL IN PARIS.**—The first tuberculosis hospital operated by the Red Cross in France is the Edward L. Trudeau Tuberculosis Sanatorium recently opened in Paris. The first patients were refugee women and children. It is expected that the hospital will have equipment for 1200 beds. Dr. James I. Gamble of Baltimore is in charge.

**HEALTH OF MEN IN CANTONMENTS.**—Surgeon-General Gorgas in reporting health conditions in army cantonments, states that for the week ending December 21, there were 21 more deaths in the National Army than during the week before, and 45 fewer in the National Guard. Pneumonia caused the greatest number of deaths,—87 out of 120 deaths in the National Guard and 77 out of 118 deaths in the National Army. Measles still continues to spread.

**HONORS FOR HARVARD UNIT.**—Field Marshal Haig has mentioned several nurses and surgeons, members of the Harvard Unit, for notable service. They include Lieut.-Col. Hugh Cabot, Major Harvey Cushing, Major V. H. Kazzanjian, Lieut.-Col. R. U. Patterson, and Private A. Mason. The nurses include Miss V. Allen and Miss G. Davidson.

**WAR RELIEF FUNDS.**—On Jan. 5 the totals of the principal New England war relief funds reached the following amounts:

Halifax Fund .....	\$665,258.93
French Wounded Fund .....	307,418.00
Armenian-Syrian Fund .....	275,014.62
Serbian Fund .....	125,725.42
Italian Fund .....	117,040.49

## BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending December 29, 1917, the number of deaths reported was 257, against 259 last year, with a rate of 17.35, against 17.72 last year. There were 37 deaths under one year of age, against 29 last year.

The number of cases of principal reportable diseases were: diphtheria, 108; scarlet fever, 34; measles, 78; whooping cough, 48; typhoid fever, 1; tuberculosis, 43.

Included in the above were the following cases of non-residents: diphtheria, 5; scarlet fever, 5; measles, 4; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 11; scarlet fever, 2; measles, 2; tuberculosis, 23.

Included in the above were the following non-residents: diphtheria, 3; tuberculosis, 3.

### The Massachusetts Medical Society.

#### OFFICERS OF THE MASSACHUSETTS MEDICAL SOCIETY, 1917-18.

<i>President</i>	
SAMUEL B. WOODWARD	58 Pearl Street, Worcester
<i>Vice-President</i>	
GEORGE P. TWITCHELL	17½ Federal Street, Greenfield
<i>Secretary</i>	
WALTER L. BURRAGE	282 Newbury Street, Boston
<i>Treasurer</i>	
ARTHUR K. STONE	44 Fairfield Street, Boston
<i>Librarian</i>	
EDWIN H. BRIGHAM,	Brookline
	8 The Fenway, Boston

#### STANDING COMMITTEES.

<i>Of Arrangements</i>	
JAMES H. YOUNG, <i>Chairman</i>	19 Baldwin Street, Newton
<i>On Publications and Scientific Papers</i>	
GEORGE B. SHATTUCK, <i>Chairman</i>	183 Beacon Street, Boston
<i>On Membership and Finance</i>	
CHARLES M. GREEN, <i>Chairman</i>	78 Marlborough Street, Boston
<i>On Ethics and Discipline</i>	
J. ARTHUR GAGE, <i>Chairman</i>	64 Central Street, Lowell
<i>On Medical Education and Medical Diplomas</i>	
HAROLD C. ERNST, <i>Chairman</i>	240 Longwood Avenue, Roxbury
<i>On State and National Legislation</i>	
SAMUEL B. WOODWARD, <i>Chairman</i>	58 Pearl Street, Worcester
<i>On Public Health</i>	
ENOS H. BIGELOW, <i>Chairman</i>	P. O. Box 213, Framingham

**UTILIZATION OF CRIPPLES IN INDUSTRY.**—It has been proposed and resolved to look up for the Suffolk District of the Massachusetts Medical Society, in order to help out reconstruction work, any available data on the present utilization of cripples in industry. I have been asked to take the chairmanship of this committee and take this opportunity, through you, of appealing to the profession for help. It is obviously not practicable to go at this matter statistically.

Our hospitals are not sufficiently far advanced in end-result work to give more than partial help in this matter and there seems to be no obvious way in utilizing industrial data to make anything like a complete survey. What can be done, however, is to accumulate instances of men throughout the Commonwealth who are earning a living in spite of the loss of a limb, stiffening of a joint, or other injury which is ordinarily considered a definite industrial handicap. If we can get enough of these instances we shall at least greatly enlarge our knowledge of trades where these people can be used. I am accordingly making this appeal to the profession of the district to turn in data for further investigation of details and turn them in either to me or to Dr. Hilbert F. Day, 657 Boylston Street, Boston.

(Signed) FREDERIC J. COTTON, M.D.

## NOTES FROM THE DISTRICT SOCIETIES.

### DISTRICT CORRESPONDENTS.

*Bristol North*, ARTHUR R. CRANDELL, M.D., Taunton.  
*Berkshire*, A. P. MERRILL, M.D., Pittsfield.  
*Bristol South*, EDWIN D. GARDNER, M.D., New Bedford.  
*Essex North*, T. N. STONE, M.D., Haverhill.  
*Essex South*, H. P. BENNETT, M.D., Lynn.  
*Hampden*, LAURENCE D. CHAPIN, M.D., Springfield.  
*Hampshire*, E. E. THOMAS, M.D., Northampton.  
*Middlesex South*, WILLIAM C. HANSON, M.D., Belmont.

### BERKSHIRE DISTRICT.

ON ACCOUNT OF LACK OF COAL the Berkshire Hills Sanatorium, North Adams, has been closed from January 1 until June 1. Dr. Wallace E. Brown, surgeon in charge, will open an office in New York City.

THE STATE BOARD OF HEALTH is to establish a clinic for venereal diseases for Berkshire County, in Pittsfield, under the direction of Dr. Nathan Finkelstein. Salvarsan can be obtained by the physicians from him free.

DR. JOHN T. BOTTOMLEY gave a very instructive address on "Jaundice" before the District Medical Society recently, and has promised to publish it.

O. L. BARTLETT, M.D., Reporter.

## Obituary.

### ALBERT DEXTER KINGSBURY, M.D.

DR. ALBERT DEXTER KINGSBURY, a retired Fellow of the Massachusetts Medical Society, died of heart disease while visiting a patient, December 26, 1917. He was born in Newton, November 8, 1842, was a student at Amherst when the Civil War broke out, and enlisted in the Thirty-second Massachusetts Volunteers, serving through the War. While acting as clerk in the War Department at the close of the War, he studied medicine and took his M.D. from the Georgetown University School of Medicine in 1869. In 1875 he settled in Needham and joined the Massachusetts Medical Society. He had practised there since. He was a member of the Needham Board of Trade and of the Needham Grange, and he was a deacon of the Congrega-

tional Church, and was the first medical examiner appointed for Norfolk County. His widow and one daughter survive him.

### EDWIN BOARDMAN ADAMS, M.D.

DR. EDWIN BOARDMAN ADAMS, age 66, died at his home in Springfield, December 21, 1917. He was born in Brunswick, Me., October 20, 1851, the son of Aaron Adams, who was a descendant of the early English settlers. He was educated in the public schools of Brunswick and Bath, Me., and at the college of physicians and surgeons, New York, receiving his M.D. in 1880.

Dr. Adams first went to Boston as a clerk in a wholesale house and then to Springfield in 1874, securing employment with the Hampden Watch Company. He then decided to become a physician, and began his studies under Dr. G. E. Foster, finishing his medical education in New York.

While in New York Dr. Adams was clinical assistant to Dr. Thomas Satterthwaite, but upon leaving the university did not remain in that city, instead returning to Springfield, where he opened an office. In April, 1884, he married Mrs. Ann J. Kent of that city. They had one daughter. He had been a Fellow of the Massachusetts Medical Society since 1887.

## Miscellany.

### RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR NOVEMBER, 1917.

*General Prevalence.*—The total of 6065 cases of communicable diseases reported in November was a considerable increase compared with the October total of 4287. This increase of 1778 cases was confined chiefly to measles, chicken pox, mumps and whooping cough.

There was an increase of 643 cases of measles in November over the October total of 589 cases. Chicken pox reports increased from 263 to 669 cases, mumps from 160 to 361 cases and scarlet fever, 440 to 587 cases.

*Anthrax.*—Four cases were reported during the month. Three of these were hide handlers in beamhouses and the other case was a dock hand who handled China goat skins.

*Lobar Pneumonia.*—The reports of this disease increased from 152 cases in October to 290 cases for November. With the exception of pulmonary tuberculosis, lobar pneumonia has the highest death rate of any of the communicable diseases in Massachusetts.

*Diphtheria, Chronic Carrier.*—An interesting case was the finding of a diphtheria carrier in a school where an outbreak of diphtheria occurred. Successive cultures from the nasal

pharynx gave positive cultures for the diphtheria bacillus. The child was put under the care of a rhinologist who, on examination, found a partially decayed cherry stone in the nose. The stage of decomposition of the stone clearly showed that it had been in this position for several months. The stone was removed and all cultures taken since from the nose have been negative. The boy had diphtheria in August, 1916. It is probable that he has been a carrier ever since. In view of the above history it would seem desirable in all cases of chronic diphtheria carriers to make a nasal examination for foreign bodies which may result in clearing the nasal passages of the diphtheria bacillus.

**Schick Tests.**—This method of definitely ascertaining the individuals in any given group who are susceptible to diphtheria is particularly valuable in institutions where considerable groups of children are assembled. During the past month a few institutions in the Commonwealth have taken the opportunity of obtaining the material necessary for the Schick tests furnished by this Department, and carried out this test on the children in the institutions.

**Measles.**—This disease appeared in Massachusetts in two districts this autumn. One district is in the southern part of the Connecticut Valley where the disease was centered in Westfield, whence it has spread to the nearby cities and towns. The other district is centered in and about Arlington and Somerville.

**Typhoid Fever.**—Most of the institutions in this state are now carrying out routine anti-typhoid and para-typhoid inoculations of the institutional staff. It is advisable to use "triple vaccine," so-called, that is a mixed vaccine prepared from typhoid, paratyphoid A and paratyphoid B bacilli, rather than the straight typhoid vaccine which contains only typhoid bacilli.

**Typhoid Fever Carrier.**—The Boston Health Department reported an interesting typhoid carrier during the month. The carrier had typhoid fever in June, 1917, and repeated examinations showed that he had bacilluria, typhoid bacilli being found constantly in his urine but none in his faeces. Repeated examinations for a few days showed no bacilli in the urine with the result that he was permitted to go home. Within a month two cases of typhoid fever were reported from his home and examination showed that he still had typhoid bacilli in his urine.

**Diseases on the Premises of Milk Handlers.**—Four cases of communicable disease occurred on the premises of milk dealers, two of these being diphtheria on farms, one case of scarlet fever in a milk handler, and one case of poliomyelitis on a farm. No secondary cases followed these cases, so far as known.

#### EPIDEMICS AND OUTBREAKS.

**Diphtheria in Amesbury.**—There were 41 cases reported in this town during November. Investigation showed the outbreak to be among children of school age, but not centered in any particular school. Extensive culturing of school children has been carried out by the school physician, and the outbreak shows signs of abating.

**Diphtheria in North Attleboro.**—In this town there were 33 cases in October and 18 in November, nearly all among the children attending one school. In November members of the local board of health and school physicians, assisted by the State District Health Officer, carried out a detailed culturing and immunization of patients, suspected cases and school children, with the result that the outbreak has been checked. Many of the cases were of a mild nasal type and would have escaped notice unless nose and throat cultures had been taken.

**Diphtheria in Baldwinsville.**—There were six cases reported from the Hospital Cottage for Children, Baldwinsville. The outbreak started in a nurse who was taken sick and five cases followed in children in contact with her. Immediate culturing of the whole institution and isolation of the cases by the institutional authorities stopped the outbreak.

**Scarlet Fever in Montague.**—An outbreak of nine cases occurred in Turners Falls Village, Montague, in November. The disease has been constantly present in this town for the past year and, when given the opportunity, flares up, so that careful investigation and public health work will be necessary to locate the centers from which the infection is spread.

**Measles in Chesterfield.**—In this town an outbreak of 40 cases was reported in November. This outbreak started during the last few days in October when four cases were reported. Investigation showed that the first case was a nineteen-year-old patient who arrived home in Chesterfield from a visit in Boston, and the second case was a girl who worked with the previous case. The cases immediately following were sister and brothers of this second case, and from these the school outbreak resulted.

#### RARE DISEASES.

**Actinomycosis** was reported from Danvers 1, and Westwood 1.

**Anterior Poliomyelitis** was reported from Boston 1, Cheshire 1, Lowell 2, Ludlow 1, Lynn 2, Needham 1, Somerset 1, and Springfield 1.

**Anthrax** was reported from Boston 1, and Woburn 3.

**Dog-bite** was reported from Boston 2, Brockton 1, and Holyoke 1.

**Dysentery** was reported from Barnstable 3.

**Epidemic Cerebrospinal Meningitis** was reported from Arlington 1, Boston 5, Brookline 1, Fall River 3, Lowell 1, Northampton 1, Salem 1, Springfield 1, Wilbraham 1, and Worcester 1.



*Malaria* was reported from Brockton 1 and Sutton 1.

*Pellagra* was reported from Northampton 1.

*Septic Sore Throat* was reported from Boston 1, Brookline 1, Chicopee 1, Haverhill 1, Lowell 1, Medford 1, Melrose 1, and Newburyport 3.

*Smallpox* was reported from Boston 1.

*Tetanus* was reported from Gardner 1, New Bedford 1, Sterling 1, Westfield 1 and Worcester 1.

*Trachoma* was reported from Boston 7, Chelsea 1, and Wakefield 1.

### Correspondence.

#### ALCOHOL IN MEDICINE.

76 Marlborough Street, Boston,  
December 28, 1917.

Mr. Editor:—

The leading editorial in the December 27th issue of the JOURNAL begins with the sweeping statement that "No one now doubts the value of alcohol in medicine, and its loss would be almost irreparable," which is not borne out by the recent resolution of the American Medical Association as follows: "Whereas, we believe the use of alcohol is detrimental to the human economy, and whereas, its use in therapeutics as a tonic or stimulant for food has no scientific value; therefore, be it resolved that the American Medical Association is opposed to the use of alcohol as a beverage, and be it further resolved, that the use of alcohol as a therapeutic agent should be further discouraged."

Exceptions could also be taken to several other statements in the editorial.

Yours truly,  
CHARLES W. TOWNSEND, M.D.

#### SUGAR AND SERVICE.

Warwick, Mass., Dec. 27, 1917.

Mr. Editor:—

Sugar is generally classed as a food but how well it serves under that classification may be open to question. It is not easy to define a food. A food as a fuel affords heat and energy to the body and in a more complex way furnishes material for body growth and repair. Gasoline and kerosene are inflammable liquids, but are not thought of as fuels in the way that wood and coal are. When these oils are used as fuel, very special device and precaution must be employed to make them serviceable and safe. "Sugar is a sweet substance obtained from many vegetable juices, but principally from the juice of sugar cane," and from sugar-beet. This substance is capable of oxidation and hence has a fuel or food value. The virtue of sugar as a food is more or less dependent upon the way it is taken into the body, or how it is yielded up to be digested and absorbed.

The teeth, the glands, and muscles of the digestive tract perform offices which extract the juices, the starches, the sugars from fruits and vegetables. The cellular fibrous envelope holding these elements excites this functioning in a normal way and prevents the too rapid yielding up of this cell juice. This is Nature's way for allowing gradual absorption of food throughout that long digestive tract. The fiber of the cane and beet may be a little too tough and unwieldy for the digestive apparatus of civilized man. He has developed an industry for artificially extracting sugar. He has found this commercially profitable and has secured a product more "portable"—performed, in effect, a seemingly economic service. "Trade" has been interested in having sugar accepted as a food and perhaps unwittingly it has been. The race has been coaxed and educated to its use and a taste and

craving for it have developed. Little, if any, general thought has ever been given to the limitation of its use in ordinary diet. A study of the consumption of sugar (refined) three years ago, shows that the United States and England used *per capita* nearly twice as much as France and Germany and six or eight times as much as Italy and Spain. The latter countries can, of course, get sugar in fruits in the natural way.

If oils must be carefully gauged when used as fuel, why should not foods be likewise? Nature has stored this precious fuel in innumerable small chambers from which it is slowly and carefully extracted by muscular and glandular processes of the mouth, stomach and intestine, and these processes are only partly subject to conscious effort. The delicate membranous linings of these parts were hardly intended for receiving directly such quantities of sugars and sirups as candy, sweet coffee and rich cakes throw on to them. Such abuse has its large place in developing chronic troubles all the way from adenoids to constipation. Acute irritation of the throat may easily be experienced by comparing how the throat feels after eating a natural food at one time with that after taking artificial extract at another. Other conditions being normal, when one eats an apple at bedtime, the throat in the morning will feel cleaner and less dry than if candy or sugar has been eaten.

Now, since greed and lust have precipitated war, and hate and jealousy flow so as to produce national adenoids here and industrial constipation there, it is well to consider seriously where artifice defeats the wholesome ends of life. Self-sacrifice is noble, but enforced denial of the sweets may help us to appreciate our native powers for digestion and assimilation of what is meat and drink to life, material and spiritual.

PAUL W. GOLDSBURY, M.D.

#### RECENT DEATHS.

DR. ALBERT D. KINGSBURY of Needham died suddenly while attending to his medical practice in that town. Dr. Kingsbury was seventy-five years of age and had practised in Needham for nearly fifty years. He was born at Oak Hill, Newton, and was a graduate of Amherst College. Dr. Kingsbury was also a veteran of the Civil War. He leaves a widow and one daughter.

DR. EVERETT J. MCKNIGHT of Hartford, Conn., at one time president of the Connecticut Medical Society, died at his home on December 25. His death was hastened by overwork in connection with the draft registration. Dr. McKnight was born in Illington in 1855, and graduated from Yale in 1876.

#### SOCIETY NOTICES.

COMBINED MEETING BOSTON MEDICAL LIBRARY AND SUFFOLK DISTRICT MEDICAL SOCIETY.—A meeting will be held at the Boston Medical Library on Wednesday evening January 16th, at 8. 15 o'clock.

Dr. Alonzo Taylor, of Washington, D.C., will speak on some aspect of food values. Dr. Taylor has been in Germany since the war, working in the prison camps. The exact title of his address will be announced later.

GILBERT SMITH,  
Sec'y, Suffolk Dist. Med. Soc.

WORCESTER DISTRICT MEDICAL SOCIETY.—Regular meeting, Wednesday, Jan. 9, 1918, at 4.15 p.m., in G. A. R. Hall, 55 Pearl Street, Worcester.

Continuing the subject of "Child Welfare as a War Measure," address by Dr. Robert L. De Normandie, Assistant Obstetrician at Boston Lying-in Hospital, and Assistant in Obstetrics, Harvard Medical School, on "Pre-Natal Care," with particular reference to organization of such work in large communities.

Dr. De Normandie has recently returned from Halifax and will also tell us something of the disaster and the relief work, illustrating by photographs or lantern-slides as he is able.



## Hotel Gerard

123 West 44th Street  
Bet. Broadway and Sixth Ave.

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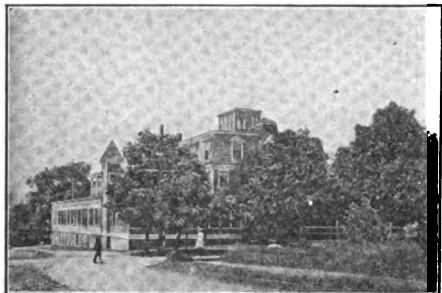
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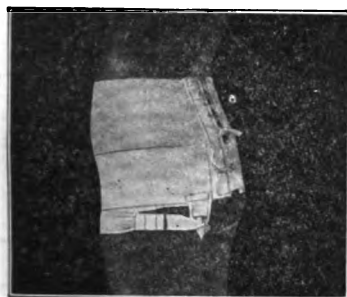
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## CONTENTS

### ADDRESS

THE X-RAYS IN PHTHISIS.

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### ORIGINAL ARTICLES

OBSTETRICS.

*By Robert L. DeNormandie, M.D., Boston*

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*By William E. Preble, M.D., Boston*

CAUSES AND TREATMENT OF CHRONIC HYPERACIDITY, HEARTBURN AND SOUR REGURGITATION.

*By Louis Fischbein, M.D., Boston*

ARTIFICIAL PNEUMOTHORAX.

*By Herbert F. Gammons, M.D., Carlsbad, Texas*

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*By Horace Gray, Boston*

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THE MILITARY SIGNIFICANCE OF CEREBROSPINAL MENINGITIS.

TREATMENT OF LEUKEMIA.

MILITARY PSYCHIATRY.

For complete table of contents, see first text page.

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### SURGERY.

#### THE HANDLING OF EARLY AND DOUBTFUL CASES OF CANCER.

GREENOUGH (*Ann. of Surg.*, October, 1917) publishes the results of clinical experience and the answers to a questionnaire sent out in order to obtain more definite rules to be laid down in regard to the important question of the removal of specimens for pathological diagnosis in cancer. The following rules are formulated for guidance in dealing with malignant disease of various parts of the body:

1. Suspected, but doubtful lesions of the external skin.—If small, complete excision of the lesion should be performed. If large, excision of a portion of the growing edge of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

2. Suspected, but doubtful lesions of the lip.—If small, V excision, with a good margin, of the whole lesion, should be performed. If large, excision of a portion of the growing edge of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

3. Suspected, but doubtful, lesions of the tongue.—Excision of the whole lesion, if small, should be performed. If large, excision of a portion of the growing edge of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

4. Suspected, but doubtful, lesions of the palate, tonsil and the buccal mucous membranes.—If small, excision of the whole lesion should be performed. If large, excision of the margin of the lesion, followed by cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

5. Suspected, but doubtful lesions of the esophagus. Esophagoscopy and excision of the margin of the lesion may be performed, but the danger of perforation of the esophagus must be borne in mind.

6. Suspected, but doubtful, lesions of the stomach.—Pylorotomy, gastrectomy, or primary gastro-enterostomy, to be followed at a later operation, in necessary, by gastrectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an

(Continued on page vi.)

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(Continued from page 16.)

exploratory incision into suspected cancer tissue a necessary or advisable preliminary to radical operation.

7. Suspected, but doubtful, lesions of the small intestine and colon.—Excision with anastomosis. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

8. Suspected, but doubtful, lesions of the gall-bladder.—Cholecystectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

9. Suspected, but doubtful, lesions of the liver.—If cancer, generally secondary to cancer elsewhere. Exploratory excision or incision into liver tissue is rarely necessary or advisable, except to confirm a diagnosis of hopeless malignancy, and thus avoid unnecessary radical operation.

10. Suspected, but doubtful, lesions of the rectum.—Excision of a portion of the growing edge of the lesion, with cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

11. Suspected, but doubtful, lesions of the kidney.—Nephrectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

12. Suspected, but doubtful, lesions of the bladder.—Cystoscopy, and excision of a portion of the lesion, with cauterization, is to be advised only after all other resources of clinical diagnosis, including consultation, have been employed, and then only when facilities for immediate frozen section diagnosis are available and the operation for cancer, if it prove necessary, can be completed under one anesthesia.

13. Suspected, but doubtful, lesions of the prostate.—prostatectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

14. Suspected, but doubtful, lesions of the testicle.—Orchidectomy. Here the difference in the severity of the possible operations for benign and malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

15. Suspected, but doubtful, lesions of the cervix of the uterus.—(a) Excision of the lesion: (b) amputation of the cervix: (c) excision of a fragment of tissue, with cauterization. Opinion is not conclusive. Some advise hysterectomy on suspicion of malignancy. This is undoubtedly radical, but preserves the patient her best chance of cure. Others prefer the exploratory excision of tissue or amputation of the cervix, to be followed immediately by the complete operation if frozen section shows cancer.

16. Suspected, but doubtful, lesion of the fundus of the uterus.—Curettage. Opinion divided. Some advise hysterectomy on suspicion of malignancy; others advise curettage and immediate frozen section diagnosis.

17. Suspected, but doubtful lesions of the ovary.—Oophorectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure.

(Continued on page 161.)

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(Continued from page vi.)

18. Suspected, but doubtful, lesions of the breast.—Local excision of tumors of the breast suspected of being malignant and submission of tissue for subsequent pathological report cannot be recommended. If direct incision with frozen section diagnosis is not possible, amputation of the whole breast, with dissection of the axilla, should be performed in suspected cancer in women over thirty-five years of age. This is endorsed by ninety per cent. of the replies.

19. Suspected, but doubtful, lesions of the lymph nodes in the neck, axilla, and groin, in cases where radical operation is a possibility even if cancer is found to be present. A block dissection of the area involved, including the adjacent lymph nodes, is to be recommended in preference to the excision of a single suspected node. Where obviously a hopeless case of cancer is shown to be present, removal of a single node may prevent a useless operation, and is to be recommended.

20. Sarcoma and obscure tumors deeply placed.—Exploratory removal of tissue for subsequent pathological examination cannot be recommended. Facilities for direct exploration and frozen section diagnosis should be secured in cases where doubt exists after x-ray studies and other clinical means of diagnosis are exhausted, before radical operation, such as amputation, is performed.

21. In general, superficial and ulcerated lesions are the only ones in which fragments of tissue may safely be removed for microscopic diagnosis. In deep tumors, where the exploratory incision necessarily opens up normal tissue to infection, exploratory excision of suspected tissue is to be condemned, and should be avoided. Where other resources of diagnosis have been exhausted, an exploratory excision, with an immediate frozen section diagnosis, and immediate performance of radical operation, if it prove necessary, is the least dangerous procedure for the patient. No suspected tissue should be excised for diagnosis, unless by a surgeon who is equipped to perform immediately the radical operation for the cure of cancer of the organ involved.

22. To these recommendations may be added the following: The routine pathological examination of all tumor tissues removed by operation should be made compulsory. To this end competent laboratories for the free diagnosis of pathological material should be maintained as a function of the State.

[E. H. R.]

### PERSISTENCE OF BACTERIA WITHIN SEQUESTRA.

TAYLOR AND DAVIES (*Ann. of Surg.*, November, 1917) find that aerobic and anaerobic bacteria both invade the body substance of nearly all sequestra and remain there as long as the sequestra persist. Gas-forming, spore-bearing, anaerobic bacilli, usually the *B. aerogenes capsulatus* and *B. malignans edematis*, persist longer within the bone than in the wound around it. They are never recovered from the wound when absent from the sequestra. Nests of these anaerobes may persist for some time after the wound is completely healed and these within the dead bone appear to be associated with the occurrence of flares after bone operations. Flares occur more frequently after sequestrectomy when the cases were over 120 days old than when the cases were under that age.

[E. H. R.]

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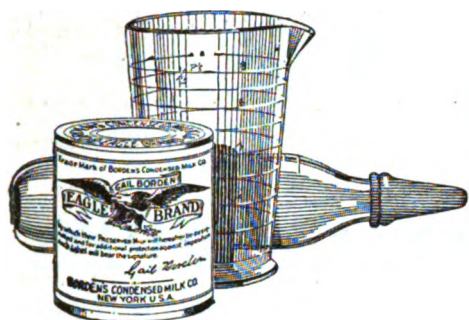
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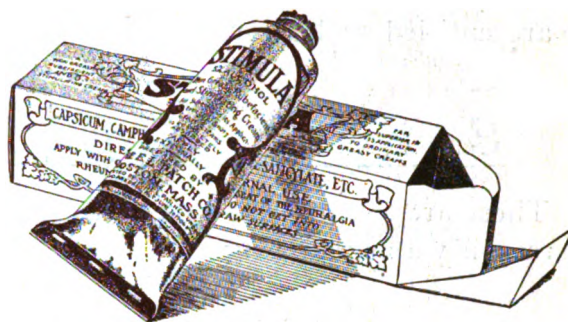
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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

January 17, 1918

ADDRESS		TREATMENT OF LEUKEMIA .....	97
THE X-RAYS IN PHTHISIS. <i>By George W. Holmes, M.D., Boston</i>	71	MILITARY PSYCHIATRY .....	98
		MEDICAL NOTES .....	99
ORIGINAL ARTICLES			
OBSTETRICS. <i>By Robert L. DeNormandie, M.D., Boston</i>	76	THE MASSACHUSETTS MEDICAL SOCIETY	
FOCAL INFECTION AND RHEUMATISM. <i>By William E. Preble, M.D., Boston</i>	82	NOTES FROM THE DISTRICT SOCIETIES .....	100
CAUSES AND TREATMENT OF CHRONIC HYPERACIDITY, HEARTBURN AND SOUR REGURGITATION. <i>By Louis Fischbein, M.D., Boston</i>	86	OBITUARY	
ARTIFICIAL PNEUMOTHORAX. <i>By Herbert F. Gammons, M.D., Orlinbad, Texas</i>	90	SAMUEL WILLIAM TORREY, M.D. ....	100
LIPIDS IN 181 DIABETIC BLOODS. <i>By Horace Gray, Boston (continued)</i>	91	ROYAL HATCH, M.D. ....	100
EDITORIALS			
THE PROGRAM OF THE STATE DEPARTMENT OF HEALTH AGAINST VENEREAL DISEASE .....	95	MISCELLANY	
NURSES IN THE UNITED STATES ARMY .....	96	THE MASSACHUSETTS VENEREAL DISEASE PROGRAM. <i>By Eugene R. Kelley, M.D.</i> .....	100
THE MILITARY SIGNIFICANCE OF CEREBROSPINAL MENINGITIS ..	96	MORTALITY STATISTICS FOR 1917, FROM THE HEALTH DEPARTMENT, BOSTON .....	102
		NOTES ON BIOLOGIC PRODUCTS FROM THE STATE DEPARTMENT OF HEALTH .....	103
		TUBERCULOSIS AND THE WAR .....	104

### Address.

#### THE X-RAYS IN PHTHISIS.\*

BY GEORGE W. HOLMES, M.D., BOSTON,

*Roentgenologist, Massachusetts General Hospital.*

THE roentgen examination of the lungs should be used perhaps much more often than is at present being done, as a supplement to the physical examination of the chest. It should never be used as the sole means of diagnosis.

An opinion based upon roentgen evidence alone is of about the same value as an opinion based upon the physical findings alone. Without a careful history, both lose much of their worth; combined with the other evidence, however, it may be of great value, as without doubt it is capable of revealing changes in the lungs which cannot be demonstrated by any other method.

In difficult cases, or cases where the physical signs are absent, it may be the confirmatory evidence upon which a correct diagnosis is made, and in certain well-defined cases it may give a more accurate picture of the extent and distribution of the process, and in this way aid in the prognosis and treatment of the case.

Unfortunately, very few roentgenologists are well-trained clinicians. It is perhaps equally unfortunate that few clinicians have a working knowledge of the interpretation of roentgen findings.

Wherever the data obtained by both methods

\* Read before the Framingham Medical Club and the Community Health Station, September 20, 1917.

have been combined, either by coöperation between the roentgenologist and the clinician, or even their combined use by a single investigator, better results have been obtained.

#### THE ROENTGEN ANATOMY.

The lung, as seen on the roentgen plate or fluoroscopic screen, presents the following shadows. The hilus and peribronchial shadow, the linear markings, and the dark background of the alveolar structure.

The hilus shadow is composed of the larger bronchi, the great vessels, lymphatic and fibrous tissue, and the peribronchial glands.

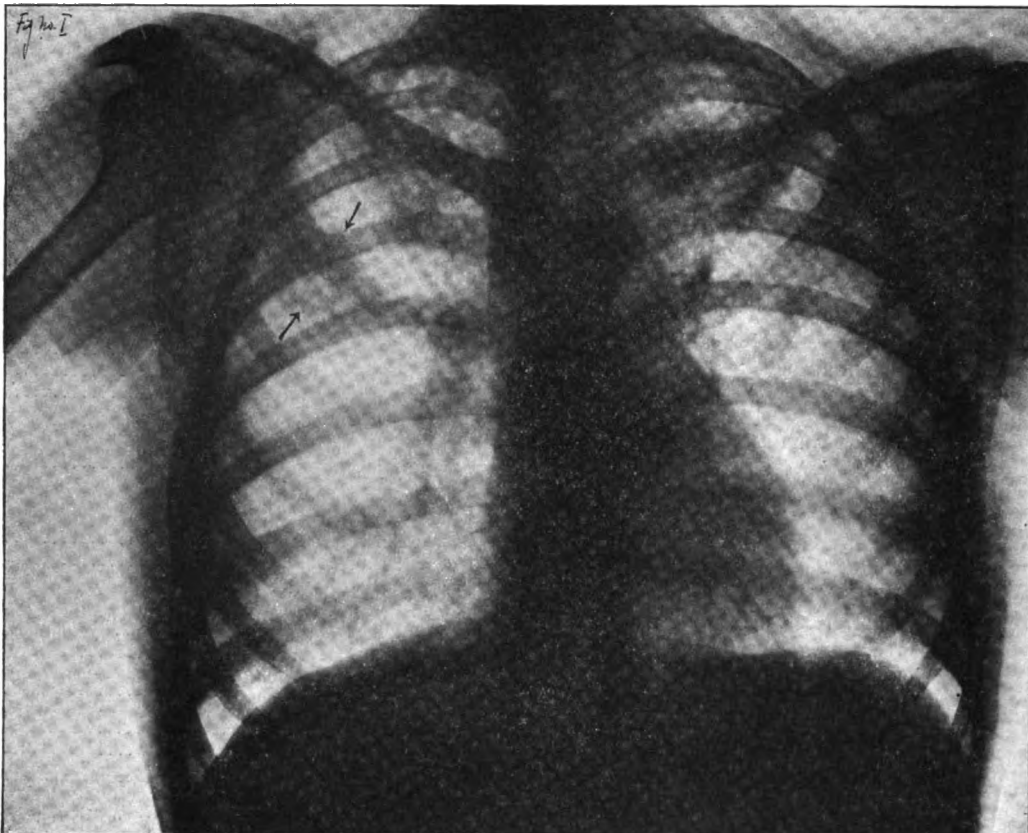
The tracheal glands lie behind the shadow of the great vessels and are not visible except when they are much enlarged and calcified. They may be seen in the lateral views.

The glandular shadows are distributed along the course of the bronchi, and may vary from rather fuzzy, indistinct shadows to the dense white patches of calcification.

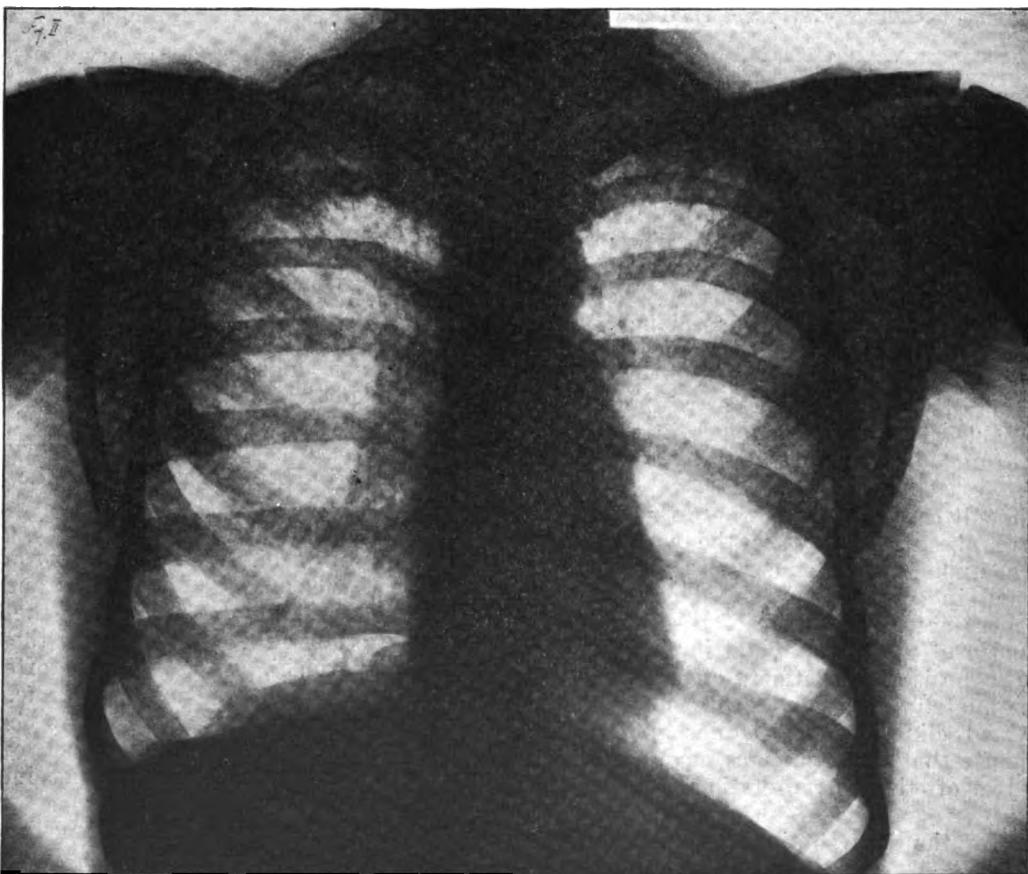
The linear markings are composed of the arteries, the bronchi, with their surrounding connective tissue, and the lymphatics and lymphoid tissue of the lungs. Changes in the linear markings are due either to changes in the tissue around the bronchi, or, as is more often the case, to changes in the lymphoid tissue. The arteries of the lungs are not subject to change.

The veins are situated midway between the branches of the bronchi, and are not included in the linear shadow.

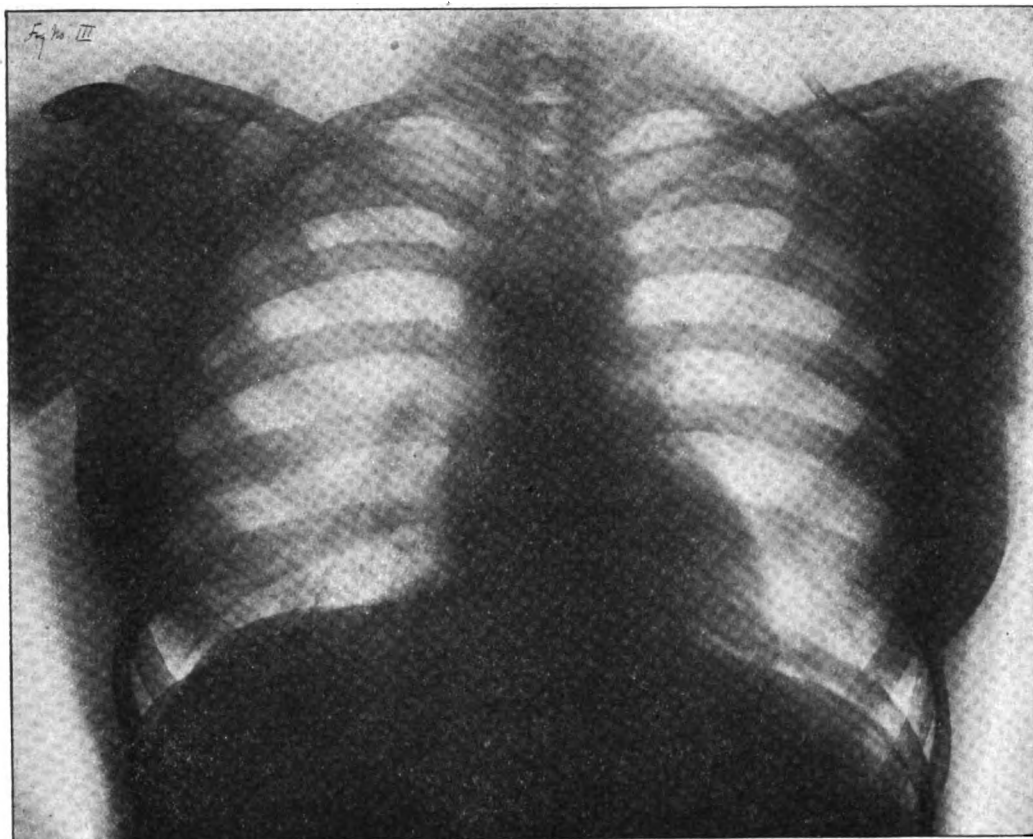
A pathological process in the lung structure tends to produce changes in the lymphatics draining the infected area. Therefore, we



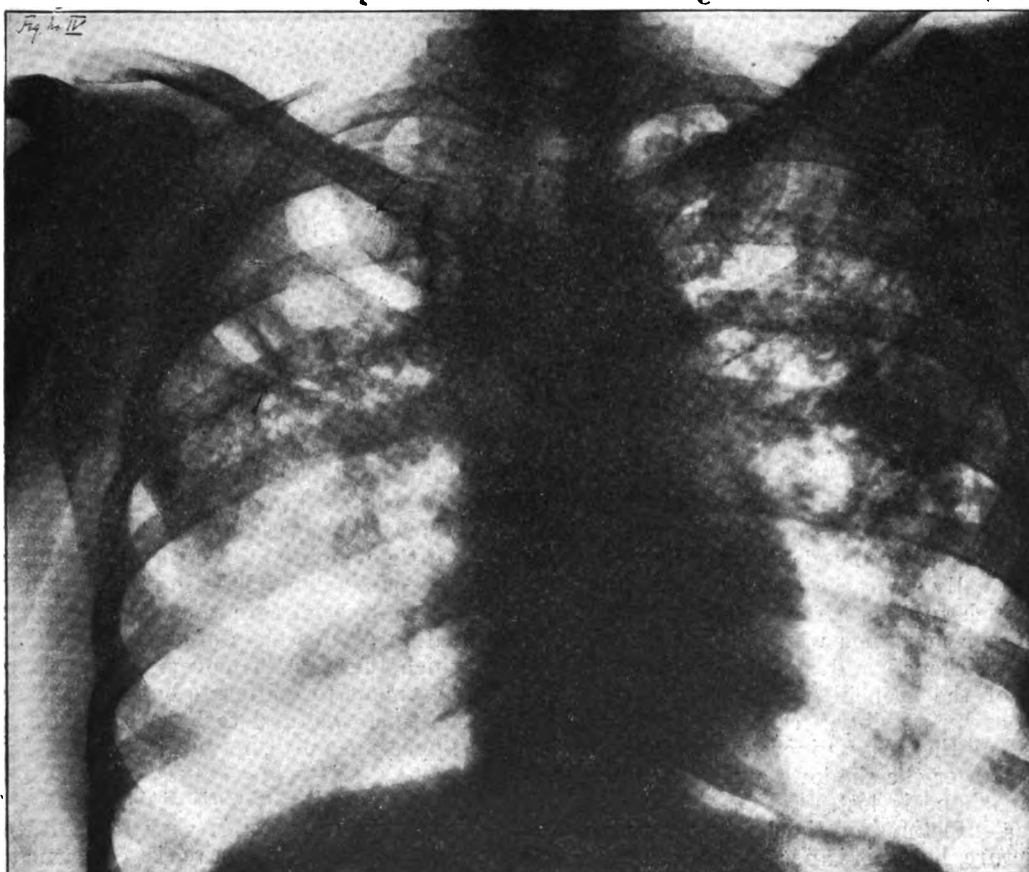
**FIG. 1.**—A fairly typical case of tuberculosis of both apices. In the area between the arrows on the right is seen a fan-shaped area of mottled dulness, with thickened linear markings running from it to the hilus of the lung.



**FIG. 2.**—Miliary tuberculosis. Fine mottled dulness throughout both lungs. Note the increased density of the apices, possibly due to a previous tubercular infection.



**FIG. 3.**—About one year after this plate was taken the patient was in one of our state hospitals for advanced cases. The thickening about the hilus of the lung and along the lesser bronchi probably represents a peribronchial tuberculosis.



**FIG. 4.**—Advanced tuberculosis involving the apices of both lungs, with a large cavity below the clavicle on the right.

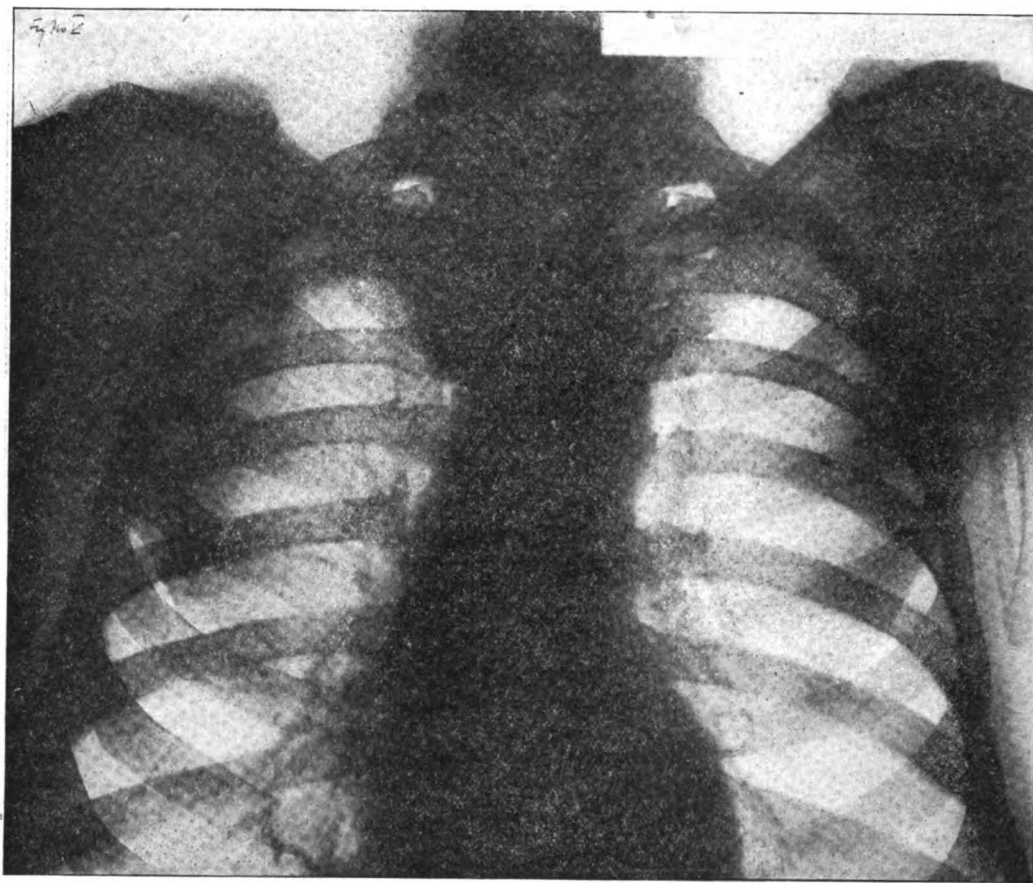


FIG. 5.—The fine, even mottling throughout both lungs seen in this plate was due to deposit of marble dust. (Marble-marker's disease.)

should expect to find a shadow in the lung substance representing the site of the pathological process, and a fan-shaped area of thickened linear markings representing the course of the lymph channels draining this area. The peribronchial glands in the infected area may also show changes.

All the lymph vessels of the lung tend to converge towards the hilus, excepting a small group near the periphery which drains into the pleura.

#### ROENTGEN FINDINGS WHICH ARE OF VALUE IN MAKING A DIAGNOSIS OF TUBERCULOSIS.

These may be divided into three distinct types,—miliary, peribronchial, and parenchymal. The third is the most common type, and is seen as an insulated group of small white areas, usually near the periphery of the lung, from which spreads a fan-shaped area of thickened linear markings which extend toward the hilus. Thickened and mottled markings in the region of the bronchi may be seen; also large dense and, possibly, calcified peribronchial glands. As the process increases and these areas become larger the shadows overlap and the typical fan shape is lost.

Other infections of the lungs present a similar picture, but this is not true of other chronic processes. Stereoscopic plates are of great

value in diagnosing the early cases of this type, as it is of special importance that the position of the group of small areas of increased density, which represent a group of tubercles, be accurately located. If it can be stated that these shadows are in the periphery of the lungs, great weight should be placed upon their presence. If, however, they are along the bronchi, the process may be only glandular.

#### MILIARY TUBERCULOSIS.

In miliary tuberculosis the picture is quite characteristic: Fine, discrete, dense spots are seen scattered evenly over the greater part of the lung field. There may also be evidence of a chronic lesion in one or both apices.

It is well known that these cases may show very little evidence on the physical examination. This is particularly true in the examination of children. Special care must be taken in the examination of this class of cases to obtain plates in which there is no movement. It is possible by movement to obliterate entirely the shadows of the tubercles, and to have the plate present the appearance of a normal lung.

#### PERIBRONCHIAL.

This type of lesion is very difficult to diagnose, as far as the x-ray is concerned. The findings are a general thickening of the linear

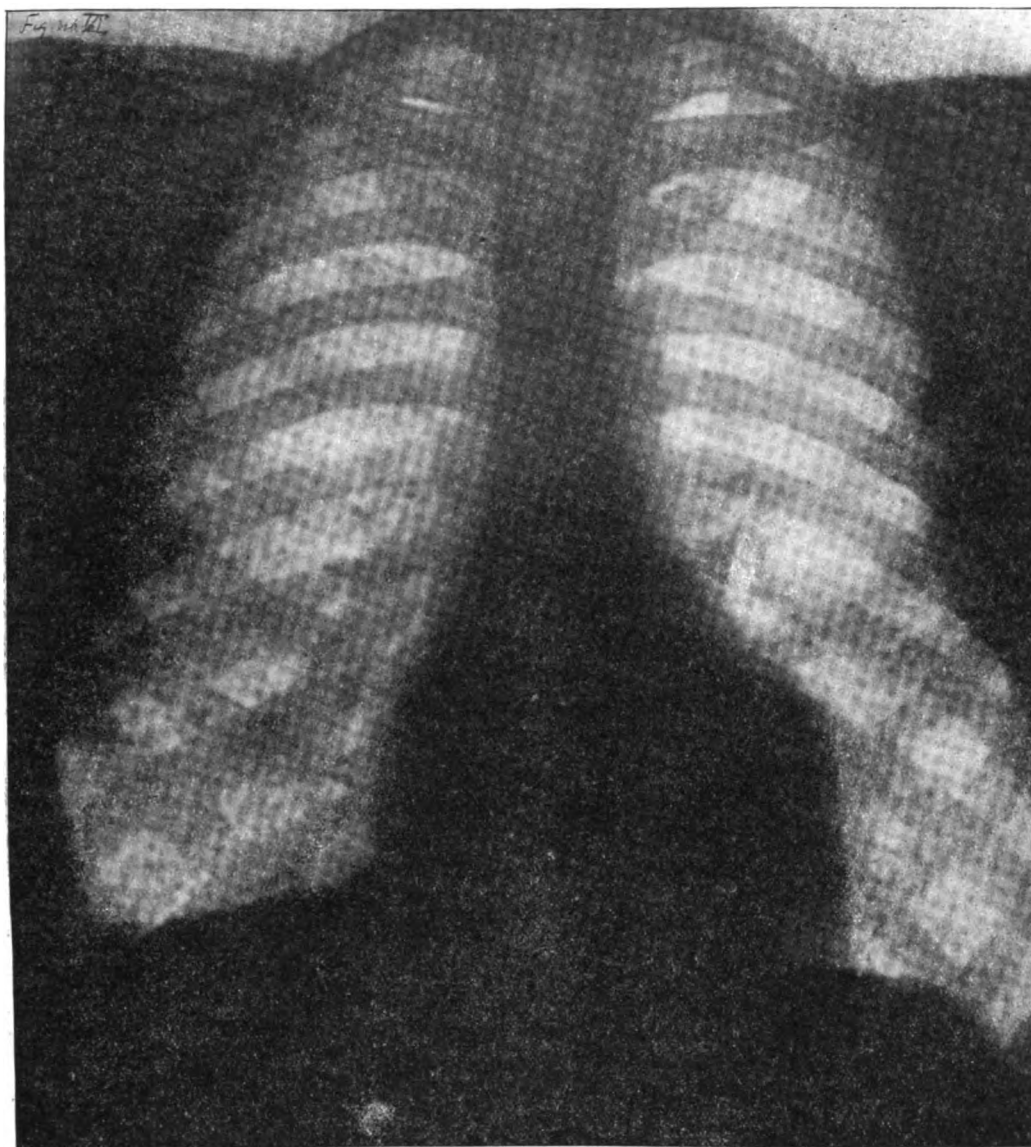


FIG. 6—This radiogram was taken of the chest of a patient who worked as a potter many years. He showed absolutely no sign of tubercular infection. Note that the mottling is most marked in the lower parts of the lung fields.

markings in the region of the bronchi, with marked changes in the peribronchial glands.

These changes should be sharply defined, and the density should be well marked. The appearance is very similar to that seen in non-tubercular infection, and to mediastic carcinoma.

The differential diagnosis must depend usually upon the history.

#### THE ATYPICAL LESIONS.

(Lesions simulating tuberculosis.)

The changes in the lungs which are most difficult of differentiation from tuberculosis are dusty lungs, syphilis, rare forms of malignancy, and acute infections which are peribronchial in type.

Dusty lungs simulate very closely miliary tu-

berculosis and cannot be differentiated from it by the x-ray. A glance at the patient and a brief outline of the history are usually sufficient, however.

Syphilis of the lung is not well understood. Some types are fairly characteristic, namely, a large involvement of one lung without infection of the other, which condition is not usually seen in tuberculosis.

The acute infections which simulate tuberculosis are differentiated usually on the history, and by repeated examinations. There is, however, a difference in the characteristic roentgen picture. In acute infections, the changes are most evident around the larger bronchi, and are less sharply defined; calcification may not be present, and the periphery of the lung is not involved.



## THE METHODS OF EXAMINATION.

The examination of the chest divides itself directly into two principal methods,—fluoroscopy and radiography.

The study of the chest with the fluoroscope has the advantage of being cheaper, both as to individual cost and as to equipment. It is also more easily and quickly done. The image seen upon the screen is that of the living, moving organs and it gives data which could not be obtained from the photographic plate, such as the movements of the diaphragm, lighting up of the lung fields during respiration, the pulsation of the different chambers of the heart and possible changes in the shape of dull areas in the lungs during change of position of the patient.

Its disadvantages are the inability to study carefully the detailed structure of the lungs, and the fact that it does not give us a permanent record, that is, those interested in the case must rely on the personal judgment of the radiologist, whereas, with the plate, a joint study is possible.

The radiographic method has the advantage of giving an accurate, permanent record of the condition within the chest, and should show any variation from the normal which gives rise to change in density, either diminished or increased. Sufficient data may be obtained from a single plate, or it may be necessary to take plates from the front and back, upright or prone, and in a considerable percentage of cases stereoscopic plates should be taken. The number and position of the plates to be taken can usually be decided upon at the fluoroscopic observation. Without the fluoroscopic observation it is necessary to take at least three plates, two of which should be a stereoscopic pair.

The ideal procedure, as it seems to me, should be a fluoroscopic observation, at which time definite records are made as to the excursion of the diaphragm, changes in shape of any abnormal shadow in reference to respiration and position, also to the illumination of the lung fields during respiration and coughing. If, at the end of this examination, the diagnosis is in doubt or it appears to be negative, stereoscopic plates with the patient in the sitting position and the tube behind, should be taken. Should the fluoroscopic findings be fairly definite, a single plate taken in the position which best shows the pathological process will be sufficient.

## Original Articles.

## OBSTETRICS.\*

BY ROBERT L. DENORMANDIE, M.D., BOSTON.

THERE has been throughout this country in the past few years a very definite awakening to the need for better obstetrics. This need is

\* Read by invitation at the Massachusetts Medical Society, Middlesex East District, October 17, 1917.

widespread, insistent and very real. The federal government recognizes it by its work through the Children's Bureau. The State recognizes it by the activities of its Board of Health (Division of Hygiene). This department has just had printed a series of letters designed to reach the women of the state who are pregnant but without medical attendance. The medical schools are, by this publicity for improved obstetric care, being forced to give better courses in obstetrics, and it is only this year that the Harvard Medical School demands twelve cases for a degree when previously it has been six.

Tonight I mean to go over the conduct of an obstetric case and point out some of the essential points in its management in such a way that it cannot be said of us that we are doing in this part of the country poor obstetrics; that we are not looking after our women and infants at least as well as any other community.

I take it better obstetrics means that we must lower the existing mortality and morbidity among mothers and infants; that each and every pregnancy must go through to successful issue so that the mother returns a useful member of her community and that the baby is alive and with no disabilities. That there is a large mortality and morbidity in obstetrics must be admitted by all, if we consult the vital statistics. That this mortality rate is as high as it really honestly should be is doubtful if we are to believe Dr. Perry's findings of his investigations in Fall River, where "in thirty-four cases in which death was immediately and indisputably the direct consequence either of parturition or of its gross mismanagement, the death record contained not the slightest intimation that pregnancy or childbirth had been in any way the cause or even a contributory cause of death."

The whole object of prenatal care is to carry along the pregnant woman with as little discomfort, with as little danger as is possible until she is delivered and up and about again. Intelligent prenatal care is essential. The bad results that we constantly hear of are usually because of the lack of prenatal care. The accidents of pregnancy and labor it will not prevent, but it will tend to minimize them.

It is not necessary here to go into all the details of what intelligent prenatal care means; you all know it well. There are certain neglected points, however, that I do wish to speak of.

The majority of pregnant women do not think it necessary to see a physician until the third or fourth month or later. They regard their pregnancy as a natural phenomenon and have not the knowledge of what can be done to help further their safety and that of their baby.

A physical examination early in pregnancy should be made in order to establish for the patient what her standard is. If this were done by all physicians how many damaged hearts would be found and safeguarded, early kidney complications found and alleviated and, if neces-

sary, an early abortion done. The blood pressure determination, so easily done and of such value, found to be normal at the beginning of a pregnancy, is of the greatest help should it rise in the latter months. The general hygiene of pregnancy must be gone into with each patient in detail. No hurried office visit is sufficient to give what advice is due, and the right, for each and every pregnant woman.

A vaginal examination is necessary on all pregnant cases as soon as they present themselves to you for care. A pelvic tumor, a retroverted uterus, or an extrauterine may be found, and these conditions are not so rare as to assume they will not occur. Each calls for its own proper treatment. It is true that some retroverted uteri right themselves with no treatment and others become incarcerated with all the train of symptoms that follow this complication: A vaginal examination will usually tell which ones will go up without difficulty and which will not. The determining factor is the relation of the cervix to the symphysis. Where the cervix is high in the pelvis, just at, or behind, the symphysis, and the fundus in complete retroversion, in these cases one must expect that incarceration will follow the growth of the fundus; but when the cervix is low and as the fundus enlarges it (the cervix) is pushed against the lower border of the symphysis, the fundus gradually swings up, the cervix being held at the symphysis. The sooner the first type of retroversion is corrected and a pessary inserted to hold the uterus in position until it cannot fall back, the better. The second type is watched and practically always goes up of itself, or possibly the only necessary advice is for the patient to assume the knee-chest position morning and night and while in that position to take six or eight long breaths.

A cause of miscarriage not always recognized and not in many instances sufficiently guarded against is coitus. Intercourse at what would be a normal period were the patient not pregnant is a very common cause for miscarriages. That in many cases intercourse has no effect on the pregnancy must be a fact, but because of the number of miscarriages I have seen as the direct result of intercourse, I now always advise my patients to avoid intercourse at these more dangerous times.

With the first visit over, and the patient's general condition known and the pelvic condition normal, the ante-partum care necessary for the remainder of the pregnancy consists in keeping the patient in the best of physical condition. The old saying that a sick pregnancy is a safe one cannot be subscribed to. The pregnant patient must be at all times well. She will have discomfort that is unavoidable, but if anything develops to make her feel below her normal wellbeing, she must report at once her symptoms to her physician. This failure to report

early symptoms is the one cause of more disasters in obstetrics than anything else. The reason that symptoms are not reported early, I believe, lies primarily with the physicians themselves, for they do not impress their patients with sufficient force the need for this. It is my custom after the first visit to see the patients once a month and to have a specimen of urine once a month, the patient coming the first and the urine the fifteenth of the month. This arrangement holds until the seventh month when the urine is seen regularly once a week or ten days and the patient about once in two or three weeks.

With the urine normal and the blood pressure staying down under 130 mm. of Hg. there is no danger that a toxæmia of pregnancy is present. A toxæmia may develop over night, but these fulminating types are so rare and when they come so overwhelming, that the physician can hardly be held responsible for the bad outcome of these cases.

It is the other type of toxæmia of pregnancy, the ultimate outcome of which, when bad, brings the physician into so much disrepute. I mean the cases which develop between the visits to the physician. They usually are of many, or at least, several days' duration. The symptoms are all too well known for me to rehearse. Though the symptoms are known when they come, one after another, the minor signals are disregarded—efficient treatment is held off—hoping that half-hearted efforts will carry the patient along sufficiently well. The symptoms accumulate, the convulsion comes and then everyone wants something done. The time to have been active was days before when efficient treatment would have successfully warded off the eclampsia for which, in many cases, the physician must be held directly responsible.

Any physician may have case after case of toxæmia of pregnancy develop in his practice and no blame can be attached to him, but any physician who has several cases of eclampsia develop lays himself open to much criticism. When this happens, he either is not looking after his cases closely enough or he has failed to impress the patients with the need of reporting their slight ills to him early. I appreciate the difficulties of making patients report as they are requested to and I also know that patients more and more are appreciating that when an eclampsia occurs there not infrequently is cause to complain.

I do not wish to give the impression that every eclamptic means neglect. That is not so, but I do mean that many follow gross neglect. A case I saw recently will perhaps explain clearly my meaning. A primigravida twenty-four years of age developed oedema of face some three weeks before; her urine showed a large trace of albumen; her blood pressure was 160. With efficient treatment, the most efficient I have ever seen outside a hospital, of catharsis,



diuresis and diaphoresis, she improved steadily up to three or four days before I saw her, when she remained stationary,—slight facial oedema, a slight trace of albumen and blood pressure 140. The question arose whether to continue the treatment or to induce labor, and I was asked to decide. She was within ten days of full term; she had a large baby with the head settling well into the brim of the pelvis. The oedema was slight of face and hands and none of the legs. She was clear mentally, had no headache, no eye symptoms and no epigastric pain. The blood pressure was 138 and the urine showed a slight trace of albumen but no casts were seen. I unhesitatingly said not to induce labor, but we carefully explained to the husband the danger that was present and told him that if any untoward symptom developed we would advise delivery. He appreciated the danger his wife was in. She started in labor twenty-four hours after I saw her and was delivered by an easy low forceps.

It is one thing to have an eclampsia develop in spite of efficient treatment; that at the present time no one always can prevent, but this is not the class that I object to. It is the patient that shows symptoms and no efficient treatment is begun that I am pleading for. At the present time elimination gives the best results in the toxæmias, but elimination cannot be obtained without efficient treatment and what that means is not necessary for me to enter upon tonight. One thing further in a toxic case, let me add; after the patient is delivered take the blood pressure every four hours until you are positive the reading is going to stay low. This one simple procedure will do much to safeguard your patient.

As we go on in the pregnancy the complication of hemorrhage becomes more common, but it must not be inferred from this statement that hemorrhage occurs only in the latter part of pregnancy. Bleeding may occur at any time and it must always be held a serious complication that calls for the best obstetric judgment. The mortality rate in bleeding cases is much too high and the responsibility, I believe, is about equally divided between patient and physician. As in the toxæmia, so here in bleeding cases, the first early symptoms are made light of. A show of blood, no matter how slight, in a pregnant woman, must be regarded as abnormal and demanding immediate attention. Delay oftentimes is fatal. Not infrequently a patient in the last months of pregnancy has a severe hemorrhage and by the time a physician arrives it has stopped or is stopping. Then a vaginal examination is made and bleeding starts up again, and not uncommonly more severe than at the first bleeding. It is fair to assume that bleeding in the last months is probably from some type of a placenta prævia, and you must determine in each specific

individual case whether an immediate vaginal examination is the indicated procedure. My feeling is that many times a vaginal examination, unless you are prepared to meet the hemorrhage that sometimes follows, is inadvisable. A case will explain my point.

A patient had had a severe hemorrhage before she was seen. The bleeding had ceased almost entirely. The physician made a vaginal examination and started a severe hemorrhage, so severe that he thought it necessary to dilate the patient and deliver her. This he did, although he was totally unprepared for such an operation. Inside of an hour the patient was dead.

From such a case there are two points to learn,—be careful about vaginal examinations in bleeding cases, and if you determine to make a vaginal, be ready to meet the possible severe hemorrhage. That further means keep away from the os uteri and make your diagnosis, if possible, by palpation through the culs-de-sac; and still again, make no examination if the bleeding has ceased, or is stopping, until you are fully prepared to meet the emergency.

In hospital work we constantly see cases that have been bleeding for days and one especially flagrant case of neglect I recall. The physician had correctly diagnosed a placenta prævia and then elected to leave the patient at her own home without a nurse. Bleeding continued and a second hemorrhage occurred and she was sent to the hospital by him in a very dangerous condition and later he naïvely said he kept her at home because he had planned to take her to a private hospital and there do a Caesarean section on her! But the second hemorrhage was so severe that he decided the Lying-in Hospital should assume the grave risk rather than he!

As the patient approaches full term, the problem of the relative size of the baby to the mother's pelvis arises. This problem is present always in every primigravida and in any multigravida with a previous history of difficult labors or when the baby in the present pregnancy is obviously much larger than in previous pregnancies.

Much has been written of the necessity of measuring the patient's pelvis previous to labor. It unquestionably should be done, for it is a guide, but that one can settle absolutely whether this or that baby can come through by measurements alone I do not believe. Much more reliable than measurements alone is palpation of the fetus and the relation of its head to the pelvic inlet. The more proficient the physician is in palpation, the less does he rely upon the measurements. If, before labor, by palpation the head is well down in the pelvis, there is no worry about the inlet of the pelvis, but if the head in a primigravida is high, it is necessary to do all we can to determine whether the head will come through the inlet or not.

Of course in many cases the head can be forced readily into the pelvis, even if it is found to be high, but these are not the troublesome cases. Where the head is high and the question of disproportion—of overriding the symphysis—is present, how best can we answer that question? Place the patient on her back in the dorsal position and make a vaginal examination. Palpate the contour of the pelvis and try to reach the promontory of the sacrum. Then, after the pelvis has been explored with the two fingers of the left hand in the vagina, swing the thumb of this same left hand up over the symphysis and with the right hand grasp the fetal head and try to push it into the pelvis.

The fingers feel the descending head, if it will come down; the thumb feels the overriding at the symphysis, if it is there, and if it is not, then it readily makes out the sulcas, if there is no disproportion. In many cases the head stays high and by these manoeuvres cannot be pushed into the pelvis. Then if added pressure is made at the fundus, not infrequently can the head be pushed down to the lower border of the symphysis and it then is fair to say that there is no real disproportion.

The inlet of the pelvis is more commonly the seat of contraction than the outlet, but the outlet is contracted often enough to demand careful examination in all primiparae. Not all physicians carry with them the little outlet pelvimeter, but every physician has a fist which can always take the place of such a pelvimeter. The patient is still in the dorsal position; the closed fist is placed between the ischial tuberosities and with a gentle rocking motion, a very excellent idea whether the outlet is contracted or not can be obtained. This, combined with palpation of the pubic arch, gives the information we seek with great accuracy after very little practice.

In by far the majority of cases we find no disproportion between the baby and the pelvis, and our examinations simply make us doubly sure all is well. In a small proportion, the disproportion is so marked that the treatment is very clear and a Caesarean is done on an elected date. But there is the doubtful, the border-line, case where it is impossible honestly to say before labor begins what is the right treatment. It is in these doubtful cases that Caesarean sections are being done so frequently. In many cases I do not doubt but rightly, but in not a few cases unnecessarily. We can measure the pelvis, we can palpate the fetus, we can etherize the patient and try to estimate the disproportion, if it exists, but we cannot tell what labor will do to the fetal head unless we are willing to allow these patients, the border-line ones, to have the test of labor. By test of labor, I do not mean a couple of hours of inefficient pains, but six or eight hours of good labor. The risk of doing a Caesarean section

after six hours of labor with no vaginal examinations is not great, and the good such a test does many times is worth the wait. I do not wish to give the idea that I am advising against the Caesarean. That I am not, except in the unnecessary case. A Caesarean is a simple procedure but it is a major operation and carries a definite mortality in the hands of even the best men, and when anything goes wrong in the technic, death usually follows. Operators are apt to say that the mortality rate in a Caesarean *should* be about 1-2%. That, in my opinion, is not the right way to put it. Each operator, when he advises a Caesarean, should state, when asked, what the risk is, what his own mortality rate is, not what a good series of collected cases show. This craze that is at the present time sweeping over the country for Caesarean section is entirely unwarranted, and I am confident that soon we shall see the pendulum swing the other way. This advice that all primiparous breeches, posterior positions or what not be subjected to a Caesarean section is not justifiable and I am sure it is not good obstetrics. In another class of cases, where the delivery the first time was difficult, many are here again advising Caesarean in the future pregnancies. A case that came to my care last year will show you what I mean.

Some two or three years before, this patient was delivered by a difficult forceps operation of a baby that lived, and did well. Before the operator left this patient he told the husband that if his wife were ever again pregnant she would have to have a Caesarean. Last year she again went to this obstetrician and he set a date for the Caesarean, but the patient objected and said she would not have it unless it were absolutely necessary. To make a long controversy short, she left her first physician and came to me. When I first saw her, two months before the expected date of the Caesarean, she had a small baby with the head even at that time unusually low in the pelvis. As term approached, there was no obvious disproportion present and I determined to let her go into labor, reserving a Caesarean if it proved necessary. She delivered herself two weeks after the appointed date for the Caesarean after a short labor.

The first hard delivery made us watch her closely; but why subject a young girl to a Caesarean and to repeated Caesareans unless the indication is real, not fanciful? This case is not an unusual story and it is happening constantly, and unless we are willing to allow some of our patients to go into labor, Caesareans of course will be the order of the day.

In primigravidae where the head stays up high, the possibility of a Caesarean must be kept in mind, but it must be remembered that a Caesarean section late in labor carries a very high mortality and ought not to be done. Few obstetricians will take this added risk; many surgeons, however, will. Some patients get well after a stormy convalescence, but many die,—and these are not reported.

If the ante-partum examination is complete and thorough, when labor begins, watchfulness is the keynote of success. Any deviation from what is normal means speedy investigation as to the cause. Change in the type of contractions, the rate and strength, their prolongation, their undue painfulness, or their inefficiency, must be noted at once. Unless physicians note these characteristics, good obstetrics cannot be done. Normal labor is characteristically one of progress, and if progress does not take place, then we must find out why it does not. Palpation will show the descent and flexion of the head, and when the head cannot be felt from above, the advance of the head may then be followed by the resistance behind the anus. The characteristic change from first to second stage pains and the increasing show which usually occurs, all point that progress is satisfactory. When such a condition is present, when the ante-partum examination shows that the presenting part is in the pelvis, then vaginal examinations in labor should be done away with or only one, or at most, two, should be made under the strictest aseptic precautions.

Recently, much has been said of rectal examinations instead of vaginal examinations in labor. Many patients complain that they are more painful and in some cases, especially when there are hemorrhoids present, they ought not to be used. I find rectal examinations are a great help in following the advance that is being made, especially so when the advance is slow and one wishes to avoid repeated vaginal examinations.

By watching the action of the uterus, we know whether it is tiring or whether it is becoming tumultuous or whether it is beginning to be boardlike. If the normal contractions and relaxations do not take place, we may be sure some complication is arising. If we neglect to note this change from normal, not infrequently a difficult operative delivery is forced upon us later when early interference would have been relatively easy. One of the first signs of a separation of the placenta is the change from normal in the feel of the uterus. It loses its soft relaxations and becomes hard and boardlike and exquisitely tender. In beginning contraction rings, the lower uterine segment becomes tender and the normal relaxation is absent. A tired-out uterus may have few and very inefficient contractions. These few examples are enough to show the importance of watching the action of the uterus constantly. Hand in hand with this, goes listening to the fetal heart; and it is astonishing how careless many physicians are about this aid to the child's condition. At the beginning of labor there seldom is any interference with the fetal circulation, but after the second stage starts or after the membranes rupture, the danger to the child begins. The fetal heart must be watched constantly if we are to protect the fetus.

With the birth of the baby many physicians feel that all danger and anxiety for the outcome is over, but I cannot feel safe until the third stage is successfully completed. More post-partum hemorrhages occur as the result of a badly managed third stage than any other single cause. The placenta may separate in a very few minutes and come down into the vagina. Then, of course, no damage is caused if it is at once expelled, but if it does not separate at once, be in no hurry,—it is time well spent to allow it to separate normally. There can be no set time when to expel it or no set number of contractions to wait for. The point to be remembered is that, if there is no bleeding and the uterus acts well, separation must occur before expulsion is attempted. But if bleeding takes place, then the uterus should be emptied carefully by Credé's. An adherent placenta is a very rare complication, and when it occurs, of course the uterus has to be emptied manually unless you happen to believe one recent writer who advises that the abdomen and the uterus be opened and the placenta taken out from above. Inspection of the placenta ought not to be merely perfunctory. A careful examination in all cases is needed, for by it you know whether you have left behind a major portion of the membranes or not, or whether a piece of placenta is retained. If the membranes are left behind, unless there is bleeding, I never attempt to go after them, as they will always come away in the lochia without damage, providing we have not infected the genital tract. But it is a different situation when placental tissue is left. That should be removed at once, for it is sure to cause more or less severe bleeding later. A succenturiate placenta is not very uncommon, as I have seen a half dozen within the year, two of which were in consultation where serious secondary post-partum bleeding took place. One of the patients nearly lost her life through a combination of hemorrhage and sepsis. In the other patient, the cause was recognized early and a curettage speedily cleared up the condition. Both patients, however, were subjected to an unnecessary risk because of failure to recognize this condition.

How so many physicians dare to leave their obstetric cases so soon after delivery, literally as quickly as they can pack up and get out, has been to me a great source of wonder. They cannot know that the uterus is well and firmly retracted; and until that fact is established, is it right to leave a patient?

In a publication of the Children's Bureau which came out this year on Maternal Mortality, the astounding facts were brought out that "in 1913 in the 'death registration area' of the United States, 10,010 deaths were reported as due to conditions caused by pregnancy and childbirth. Of these deaths 4542 were reported as caused by puerperal septicemia." Using

these figures as a basis it was estimated that there were in the whole United States 15,376 deaths in 1913, due to childbirth, and 6977 of these were due to sepsis.

Such figures are staggering and almost unbelievable. But Dr. Meigs, the author of the pamphlet, says that the figures are probably a gross underestimate, and this conclusion is backed up by the quotation I read earlier in the paper about the falsification of death causes in Fall River. It is not to be supposed that conditions are any worse as regards honest death returns in Fall River than in other cities and towns.

We are not going to improve our mortality rate in obstetrics unless we first admit one exists. If we try to cover up the causes of deaths and try to blind ourselves to the real underlying cause, we shall never improve the condition. Physicians cover up deaths from sepsis because they fear they will be blamed—and is that fear groundless? They should be in by far the majority of cases of sepsis. Read Oliver Wendell Holmes's original communication on the havoc of puerperal fever, in the *New England Quarterly Journal of Medicine and Surgery* for April, 1843. Read Sinclair's book on Semmelweis, a pathetic life story. The deaths then were terrible, but those men showed the cause, and we now, knowing the cause, still lose thousands of women a year from what is surely almost entirely a preventable disease. Communities point to their low death rates from typhoid and other preventable diseases, but as yet there has been no sustained effort to lower the death rate from diseases of childbirth. The death rate has remained about stationary, with slight annual fluctuations but with no steady drop.

Dr. Meigs compares the death rates from fifteen foreign countries with that of the United States and shows that the United States stands fourteenth in the list, only two countries, Switzerland and Spain, showing a higher rate, while Sweden, Norway and Italy show the lowest rates.

Can we dispute these facts as published by the federal government, or must we accept them as the true state of affairs? I am afraid there is nothing for us to do but to accept them and go to work in every possible way to improve them. The State Department of Health, under the stimulus of the war, is already planning out a campaign to enlighten the women of the State what better obstetrics means, what child conservation means, and it will not be long before definite propositions to improve these bad conditions will be before us.

Now to be specific, how can we cut down the death rate from sepsis? In a word, we must

develop the physician's conscience, his obstetric conscience, if you will. We all *know* obstetrics is surgery and an important branch of surgery, and no man will for an instant think he can do surgical work without being clean, surgically clean. The slovenly, dirty methods in obstetrics must be driven out. Much surgical work is done in community hospitals and if cases go wrong in them, there is a certain amount of publicity gained, which hurts. Most obstetric work is done in homes where the standard is what the physician elects it should be. When cases here go wrong they are more easily covered up than if they are within the hospital. That they are covered up, I think I have already sufficiently shown.

Careful ante-partum examinations will reduce the need of vaginal examinations in labor and therefore reduce the opportunity of carrying infection into the vagina. Shaving the patient, and careful scrubbing of the external genitals, combined with the use of rubber gloves, will still further minimize the danger from sepsis. Bungling operating without sufficient experience, without any standards of asepsis, is one of the chief causes of sepsis. The willingness of many physicians to do hard operative work in obstetrics when they hesitate to do minor surgical work is beyond my understanding.

It is no credit to a physician that he goes through years of practice without sepsis. It simply means that he is surgically clean; that he has an obstetric conscience. But on the other hand, a physician who has several cases of sepsis a year should be severely criticized and should be made to feel that he is a menace to the community wherein he practises, and until he improves his technic he should be barred from practice.

When sepsis appears, the first thing to do is to admit it, and then treat it. I am confident that much damage is done by the so-called radical treatment of this condition. The curette or the douche does more harm than good. They generally spread the infection and make a bad matter rapidly worse. Placing the patient in Fowler's position, an icebag to the fundus of the uterus, small doses of ergot, fresh air and plenty of good food, no matter whether the patient is running a temperature or not, is much better treatment than the curette or the douche.

Such then, in brief, is the outline of what better obstetrics means. The obstetric situation today is not a pleasant one, but the ray of light in it is the awakening of the public demand for improved obstetric hospitals and for a higher standard of obstetric work. It is a growing demand and one that we physicians must recognize,—be ahead of and not lag behind.

## FOCAL INFECTION AND RHEUMATISM.\*

BY WILLIAM E. PREBLE, M.D., BOSTON.

### I. Scope of Paper.

THE object of this paper is to summarize briefly the more important points in our present knowledge of focal infections in their relation to chronic arthritis, and to give in some detail the main indications for treatment of the latter disease.

### II. Historical.

The general theory of systemic disease arising from some local lesion is very old. S. Spooner, M. D.,<sup>1</sup> a dentist, in his "Guide to Sound Teeth," published in 1838, remarks:—"There can . . . be no doubt but that diseases in the mouth often severely affect the constitution, and are conducive to several diseases of the general system." And again:—"I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted by directing our enquiries into the state of the teeth in sick people." E. G. Kelley, M.D.,<sup>2</sup> another dentist, in his book "Kelley on the Human Teeth," published in 1843, expresses similar views, and quotes Dr. Fitch's report of "two remarkable cases of rheumatism caused by the teeth," one of which was permanently relieved by extraction of the diseased teeth.

Note that these ideas were expressed several years before the birth of bacteriology—in 1850.

On October 20, 1875, Dr. John W. Riggs, a Hartford, Conn., dentist, read a paper before the American Academy of Dental Surgeons in New York, ascribing pyorrhea as a cause of systemic disease. Two years later, in 1877, Dr. Alfred Mantle, of England, pointed out the relationship between the tonsil and rheumatic fever. In 1899, Adami<sup>3</sup> published his paper on "Latent Infection and Subinfection," and in 1914 he elaborated the ideas expressed in his early paper.

In 1900 Poynton and Paine,<sup>4</sup> of England, began their wonderful series of papers on rheumatic fever, proving that the disease is caused by the diplococcus rheumaticus, or streptococcus rheumaticus, and that the original focus of infection is usually in the tonsils.

In 1909, Billings<sup>5</sup> and Rosenow began to publish the results of their work at Rush Medical College on focal infections, and, by wonderful team work of clinicians, laboratory men and surgeons, put the whole subject on a scientific basis.

### III. Focal Infection.

Billings defines a focus of infection as "a circumscribed area of tissue infected with pathogenic micro-organisms." The foci may be *primary*, usually located in tissues communicating with a mucous or cutaneous surface; or *secondary*, from extension of the infection through tissues, lymph channels, or blood

stream. An example of the former would be an infected tonsil, the crypts of which allow easy access to bacteria from the mouth, and the interior of which is an almost ideal breeding-place for micro-organisms. The tissue is partially walled off from the general circulation, thus protecting the parasites from the bactericidal powers of the body, and favoring the development of symbiosis between host and parasite. Bacteria may escape through the capsule to the peritonsillar tissues, through the lymph channels to cervical glands and probably to pleura and lungs, or through the blood stream to joints and viscera. Secondary foci may be formed in any of these tissues, and may in turn furnish bacteria for further dissemination.

Common locations of foci are the tonsils, root canals of the teeth, accessory sinuses, adenoid tissue, gall-bladder, appendix, and the various organs of the male and female pelvis. Less common locations are furuncles and ulcers of the skin, the middle ear and mastoid, infections about finger and toe nails, and ulcers and infected thrombi of the rectum. From these foci of infection, there may emanate bacterial emboli or a bacteriemia.

The various strains of streptococci are the most common offenders. The bacteria or bacterial emboli enter the blood stream and lodge in the smaller or terminal blood-vessels in the various tissues and form new colonies, or release toxins when they die that poison the tissues. The various strains have a specific elective pathogenic affinity for the tissues in which they lodge. Cultures from a case of endocarditis, injected intravenously into rabbits, will give their chief lesions in the heart of the animal; cultures from the gall-bladder will produce cholecystitis, and from the appendix, appendicitis. The strain of streptococcus may change its affinity after a period in animal tissue, thus accounting for the lighting up of an appendix or a gastric ulcer in a person subject to, perhaps, recurrent attacks of acute arthritis.

The scientific demonstration of the truth of this conception of focal lesions as a cause of systemic disease has revolutionized our treatment of scores of diseases. Many of the diseases formerly supposed to owe their etiology to some "diathesis" or "dyscrasia" are now known to be of infectious origin. Rheumatism is an excellent example of the above statement, and the erroneous idea that "red meat" and acid fruits and vegetables cause rheumatism is still deeply embedded in the mind of the layman.

Nearly every one has at some time some local infection which *might* become a focus of systemic disease. The factors involved in the relative infrequency of systemic infection as compared to local infection concern both the host and the parasite. As regards the host, his general physical condition and his natural or acquired immunity are governing factors. The natural defenses of the body—the bactericidal

\* Read before the Kennebec County Medical Association, Augusta, Me., Oct. 2, 1917.

powers of the tissues, blood plasma, and phagocytes—protect the large majority of people from systemic infection. Indeed, the local infection may itself act as a stimulant to the development of body defenses and the formation of protective antibodies.

Exposure to cold, malnutrition, exhaustion, alcoholic excesses, and the drug habit all tend to lower the resistance of the individual.

As regards the parasite, its virulence, the number present, and accessibility to avenues of exit from the primary focus are factors having to do with the development of systemic disease from the local infected area.

In order to realize the importance of the subject, we have only to consider the large number of diseases that have been proven to develop, or may develop, from focal infections. Of the common acute diseases, rheumatic fever with its sequelae such as endocarditis, myocarditis, pericarditis, and pleuritis; cholecystitis, acute appendicitis, acute nephritis, purpura, and erythema nodosum probably always arise from a focal infection.

Gastric and duodenal ulcer, iritis, chorea, pancreatitis, and spinal myelitis usually owe their existence to distant infected foci.

Chronic infectious nephritis, cholecystitis, endocarditis, neuritis, and arthritis deformans have been definitely proven to be in this category. Some cases of anaphylactic disease, such as bronchial asthma, urticaria, and hay fever, are caused by a focal infection.

#### IV. Rheumatism.

Rheumatism may be taken as an example with which to describe in some detail the development of systemic disease from a focal infection. The term "rheumatism" is a much-abused word. By many, it is applied, not only to the various types of arthritis, acute and chronic, but it is also used as a sort of blanket diagnosis covering all obscure aches and pains. Arthritis is a much better term to apply to the various diseases of the joints and surrounding tissues. Of the acute types it is necessary to distinguish between the ordinary rheumatic fever and acute gonorrhoeal arthritis. The former never causes suppuration in the joints, and usually subsides without causing permanent damage to the joint structures. It frequently follows acute tonsillitis, or other acute streptococcus infection.

The gonorrhoeal type always accompanies or follows an acute urethritis. Suppuration frequently occurs in the joints, which are often permanently damaged. The suppurating joints must be treated surgically.

The chronic arthritides are more complex, and less easily differentiated. Arthritis deformans, the ordinary kind of so-called chronic rheumatism, is a fairly distinct type. The chronic course, with exacerbations and remissions, enlarged, painful joints, contractures of

muscles from myositis, deformities of joints, and a tendency to attack the larger joints, is a fairly distinct clinical picture. Chronic gout is a rare disease in this country. The exacerbations are more violent, the small joints are usually the ones attacked, and in a very large majority of the cases the joints of the great toe are at some time involved. Gouty tophi are usually present and the uric acid content of the blood is increased.<sup>8</sup>

Chronic gonorrhoeal arthritis is more apt to be monarticular, and the knee, ankle, wrist, shoulder, and spine are the joints most frequently involved, in the order named. Myositis practically never accompanies it. The gonorrhoeal focus can usually be found.<sup>9</sup> Tuberculous joints are usually single, often suppurate, and frequently follow trauma. Charcot joints, with the disorganization of joint structures, are always associated with tabes. Senile arthritis, a degenerative process, is recognized by the age of the patient, and the absence of chronic myositis. A sort of vascular arthritis occurs in cases with poor circulation.<sup>10</sup>

Arthritis deformans may be hypertrophic or atrophic; in fact, the atrophic is frequently the end stage of the hypertrophic. The spine is frequently involved. In every case a primary focus of infection may be assumed, from which bacteria, or bacterial emboli, are released and lodge in the smaller blood-vessels of the joint tissues. Endothelial proliferation of the lining of the blood-vessels occurs, with or without thrombosis. There results blocking of the blood-vessels with hemorrhage into the immediate tissues, and multiplication of leucocytes and plasma cells, or fibrino-plastic exudate with connective tissue overgrowth.<sup>11</sup> The circulation in and about the joint is seriously impaired, and the nutrition of the joint suffers. Adhesions form, and the tissues are matted together, interfering with the mobility of the joint. The neighboring muscles are usually infected, causing the troublesome contractures which are the chief cause of deformities. The metabolic changes in the joint tissues have been well described by Nichols and Richardson.<sup>12</sup>

#### V. Primary Focus.

The primary focus of infection may, theoretically, be located in any tissue in the body, and in some cases it is difficult to find. The most common locations are the tonsils, the peridental tissues, and the accessory sinuses. Tonsils may appear perfectly normal, and yet harbor the primary infection.

Abscesses may exist at the apices of teeth with absolutely no clinical symptoms. A very large percentage of devitalized teeth have abscesses at the roots, and the x-ray is the only sure way of discovering the abscess. Teeth with crowns or bridges are particularly apt to harbor infection about the roots. The accessory sinuses may harbor a local infection without giving clinical symptoms. Here again the x-ray



is the deciding factor. The prostate gland, Fallopian tubes and pelvis of the kidney, gall-bladder, or appendix theoretically may harbor the primary infection. It is probable that some cases are the result of infection in the bowel, not from the absorption of the products of proteid putrefaction, or from the absorption of bacterial toxins, but from the passage of the bacteria themselves through the intestinal wall and into the blood or lymph stream.

As bacteria probably do not pass through the healthy intestinal mucosa, injury to the bowel by infection or as a result of stasis or chronic constipation must be assumed. Beveridge<sup>18</sup> called attention to the fact that many soldiers in the South African War suffered from arthritis following attacks of acute dysentery. Micrococci were isolated from the blood in cases with arthritis, but were not found in cases without arthritis. If a patient with arthritis has visceral ptosis and stasis, it should not be assumed that the stasis is the cause of the arthritis. The focus of infection is much more likely to be elsewhere.

The internist requires the co-operation of various specialists in handling these patients. It is frequently necessary to have examinations made by the nose and throat man, aurist, gynecologist, G.-U. specialist, roentgenologist and dentist. Valuable information may be obtained by examining the blood, stools, urine and joint exudates for bacteria. In some cases it may be advisable to excise lymph nodes proximal to the affected joints, and isolate the offending organism. The knowledge may prove valuable, for it does not necessarily follow that because a patient with arthritis has enlarged tonsils, the latter are the cause of the arthritis. The general condition of the patient must be carefully observed. Many of these patients are undernourished, and their metabolism impaired by the chronic toxemia resulting from the bacterial metabolism. Mental depression is a common symptom that requires attention.

A careful and complete history of the patient is always essential. Recurrent attacks of sore throat or tonsillitis would bring the tonsils under suspicion, however innocent they may appear. A constant or recurring unilateral nasal discharge would raise the question of a chronic infection in one or more of the sinuses. Any constant or recurring discharge from the ear would call attention to the middle ear as a possible focus of infection. The source of pus in the urine should always be ascertained, as infection in the kidney, bladder, prostate, seminal vesicles, uterus, or Fallopian tubes may be the source of systemic disease.

As syphilis may be the cause of a type of chronic arthritis, a Wassermann test is indicated in obscure cases.<sup>14</sup>

#### VI. Treatment.

The treatment of arthritis deformans and, in

fact, of all of the diseases that may arise from a focal infection should begin with the birth of the child. Of first importance is the care of the mouth. St. Vincent's Orphanage in Boston, an institution caring for about 300 children between the ages of 4 and 14, prior to the year 1910 maintained no dental supervision of its inmates. The number of cases of infectious disease in the years 1908 and 1909 was 103 each year. In 1910 Dr. Frederick A. Keyes was appointed visiting dentist, and installed a system of prophylactic dentistry. The figures of incidence of infectious diseases for 1910, 1911, 1912, and 1913 are respectively 87, 52, 20, and 7. The seven cases in 1913 were due to an epidemic of measles, introduced by a new inmate.<sup>15</sup> These startling figures give a glimpse of what may be possible for a community in the way of prophylaxis. The so-called slight infections of childhood may be the cause of residual infectious foci that endanger the future health or even the life of the child. It is hardly necessary to observe that in all the so-called children's diseases, the advice of a competent physician should supersede that of "grandma."

The general care of the child as regards clothing, bathing, care of teeth and mouth, and intelligent regulation of the diet, influences the whole future life of the individual—physical, mental, and moral.

The treatment of arthritis deformans varies with the condition of the patient. The first step is to find and remove the primary and all possible secondary foci of infection, and usually the surgeon must be called in. It must be remembered that every colony of the causative micro-organism is a focus that may continue to furnish bacteria to the blood stream after the primary focus is removed. The colonies in the joint tissues may themselves be sufficiently vigorous to keep alive the infection after the surgical removal of the original source of infection. This accounts for many failures in treatment.

After the local infection is removed, the task is but begun. Every possible means must be used to build up the resistance of the patient. Rest, fresh air and sunshine, tonics, baths, exercise, and diet must all be given careful attention.

*Rest.*—Rest in bed is advisable if there is much active inflammation, until the excessive tenderness of joint tissues abates.

*Fresh Air.*—Plenty of sunshine and fresh air have the same beneficial effect in these cases as in other chronic diseases.

*Drugs.*—As regards drugs, salicylates relieve the pain, and iron or arsenic may be indicated as general tonics. The bitter tonics or hydrochloric acid in essence of pepsin may be used to stimulate the appetite.

*Baths.*—The excretory functions of the skin should be stimulated by daily baths. Many of



these patients are too debilitated to take cold baths, but tepid baths are just as beneficial.

**Diet.**—As regards the diet, it should be remembered that the old "red meat" theory was exploded in 1902, but the idea is not yet completely eradicated. It was formerly assumed that uric acid and rheumatism were in some way related, and that the so-called red meats—beef, mutton, venison, etc.—contained more uric acid than the lighter-colored meats. Both assumptions were wrong. Arthritis deformans is an infectious disease, and the only respect in which food influences its course is in the way of general nutrition. As regards the "red meats," it was definitely proven, over fifteen years ago, that beef, mutton, etc., contain less than one-third as much of the purin bases (from which uric acid is formed) as chicken, veal, and lamb.<sup>18</sup>

**Proteid.**—Patients with arthritis deformans need plenty of protein to help build up the wasted muscles and other tissues. Recent work by the biological chemists seems to show that all of the amino acids found in the various proteids are necessary constituents of the body, and it is probable that a considerable surplus of proteid, above the quantitative proteid requirement, is necessary in order to furnish a sufficient variety of amino acids to satisfy the wants of all the body tissues. Meat, fish, milk and eggs should be given freely, and the total proteid intake should approximate 100 grams daily.

The carbohydrate intake should be regulated according to the general state of nutrition of the patient. The obese patient should have small quantities of bread and sweets, with an abundance of green vegetables and fruit. The poorly nourished patient should have plenty of bread, with butter, milk, and cream added freely to the diet. All of these patients should have plenty of fruit and fruit juices, and fresh vegetables to supply the various salts necessary for the body chemistry.

It should be remembered that the old idea, that acid fruits and vegetables cause rheumatism or "make the blood acid," is erroneous. On the contrary, practically all of the organic acids in our common fruits and vegetables form alkaline carbonates when absorbed, and increase the alkali reserve of the blood. Prunes, plums, and cranberries are the exception.<sup>17</sup> Oranges, grapefruit, tomatoes, etc., with a sufficient quantity of the fodder vegetables to give the necessary bulk to the stools, are indicated.

The fats are used freely or sparingly according to the patient's store of body fat. Butter and cream are, as a rule, very easily handled by the digestive tract. It is never necessary to give olive oil or cod liver oil, as butter and cream are no more expensive, are just as nourishing and much more palatable.

**Fluids.**—The fluid intake is important. Sufficient water and other liquids, such as tea, coffee, and milk, should be given to enable the

kidneys to excrete with the least possible irritation not only the normal waste products of metabolism, but also the toxins released from the dead bodies of the bacteria, or formed by the bacterial metabolism. A minimum of two quarts daily should be given to an adult. Intelligent supervision of the diet is the most important single factor in building up the health of these patients.

The local treatment of the joints in the severer cases is a problem for the orthopedic surgeon. Every possible means should be used to restore the circulation in the anemic and undernourished joint tissues. In the stage of active inflammation rest is essential, and bandages, splints, or plaster casts may be necessary. After the active inflammation has subsided, passive motion should be used, then active motion, and finally graduated exercise of the joint to break up adhesions and restore mobility. Massage is particularly beneficial. Alternating hot and cold shower baths improve the circulation, and electricity relieves the pain and may help the tissue metabolism. The Bier treatment may be used to induce a passive hyperemia of the joint. In some cases, surgery is indicated to reduce deformity caused by contractures and ankylosis.

**Vaccines.**—Vaccines may be indicated to assist in the formation of specific antibodies. The autogenous vaccine should always be used. The use of stock vaccines is unscientific, and is quite as likely to do harm as good.

Sera have been tried without any beneficial result, and in some cases distressing anaphylactic symptoms result.

Recently Miller and Lusk<sup>18</sup> have treated acute and chronic cases of arthritis with intravenous injections of foreign protein. Proteose, albumose, and typhoid vaccine were used with good immediate results. Thomas<sup>19</sup> has recently reported a series of 86 cases treated with typhoid vaccine. The end-results do not seem very promising, but more experimental work along these lines may demonstrate the value of this method of treatment.

## VII. Conclusion.

There is still much to learn about infection and arthritis. Neither our knowledge of these subjects nor our methods of treatment have yet approximated perfection, but the progress in the past ten years gives hope for the future.

Our success in the treatment of these arthritics will be directly proportional to the amount of intelligent, painstaking work and attention to details. One hundred per cent. of cures is not expected.

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## CAUSES AND TREATMENT OF CHRONIC HYPERACIDITY, HEARTBURN AND SOUR REGURGITATION.

BY LOUIS FISCHBEIN, M.D., BOSTON.

THERE are very few affections in the domain of internal medicine, the conception of which is so much influenced by the *a priori* view of the physician, as are some of the affections of the gastro-intestinal tract. One needs only to mention the significance and importance attached by some physicians to ptosis of the abdominal organs, the views as to the importance of constipation as a cause of local and general disorders, and the vague conception of biliousness, nervous dyspepsia, intestinal indigestion, and auto-intoxication. It is much the same as regards hyperacidity, although this is one of the most familiar gastric disorders, and one that the physician is daily called upon to treat. Only a few years ago, gastralgia played a prominent rôle in painful gastric affections; it was assumed to be due to some form of gastric spasm induced by hyperacidity. Recently, however, a tendency has developed, especially among surgeons, to go to the other extreme, and deny the existence of hyperacidity as an independent functional disorder, and to regard it merely as a symptom of some lesion within the gastro-intestinal tract. And even among those who consider chronic hyperacidity as a clinical entity, we find a great deal of vagueness as to its etiology, symptomatology, pathogenesis, and treatment.

Many physicians class any functional gastric disorder as hyperacidity when it gives rise to heartburn and sour regurgitations. And even such authors as Luthje and Albu consider the condition hyperacidity in the presence of these symptoms, though the gastric acidity may be only normal, or even subnormal. In the latter case, however, they use the term "latent hyperacidity."

Now these views, which associate heartburn with hyperacidity, are, to my mind, erroneous and at variance with clinical facts. Comparing the findings in the gastric contents with the subjective symptoms of the patient, it is found that sour regurgitations and heartburn are very rarely symptoms of hyperacidity. Sour regurgitation occurs only when there is an associated hypersecretion, while heartburn is found in connection with normal, sub- and even anacidity, and is, therefore, when continuous and persistent, a separate gastric disorder differing from hyperacidity in its etiology, symptomatology and treatment.

Chronic hyperacidity as a functional disorder and independent of any organic affection is, according to my observation, found only in the psychoneurotics, in whom it constitutes a fairly common affection. It occurs more often in young adults and in the middle-aged than in the elderly, and is more common in women than in men. The symptoms of hyperacidity appear from half an hour to two hours after meals, and vary greatly in different patients, and frequently even in the same patient at different times. In the majority of cases there is a sense of uneasiness, fullness or distress in the gastric or in the umbilical region, belching of gas, dryness of the tongue, and a disagreeable taste in the mouth. Some patients complain of pain in the region of the stomach or across the abdomen, of a sense of weight underneath the sternum, as if some foreign body had lodged in the esophagus, and a disagreeable pressure in the back, between the shoulder-blades. In some instances the pain and the distress are in the lower part of the abdomen, which is greatly distended, with tenderness over both iliac fossae, belching of gas and passing of flatus,—a condition which is quite often diagnosed as intestinal indigestion, and, by some of the older physicians, as flatulent dyspepsia. Constipation is usually present, but in some cases there are normal daily evacuations, and in others even diarrhea. The appetite varies, sometimes greatly impaired, at other times very good, depending more upon the general than upon the local condition of the stomach. The same is true of the weight and the general health, although cases of fifteen to twenty pounds in weight are by no means rare.

Pains are not frequent, and are rather dull in character when present, but in some cases they are quite severe, shooting from the gastric region through the back, and are relieved by food, as in gastric ulcer. In a case of hyperacidity in a psychoneurotic woman, about 55 years of age, the pains were on a few occasions so severe as to originate the suspicion of either ulcer or gallstones; but she has since then developed diabetes, and the pains, as well as the other gastric symptoms, have disappeared, not having returned in about seven years.

There is in addition a train of nervous symp-

toms, such as headache, backache, dizziness, pressure on the back of the head, disturbed sleep, and in women, an "all-gone feeling," palpitation of the heart, and various paresthesias. These nervous symptoms are in some patients quite prominent, while in others they are masked by the local symptoms, and elicited only by close questioning.

*Sour Regurgitation or Acid Eructation.* This occurs only when there is an associated hypersecretion, which, contrary to the general opinion, is found quite often in normal and subacidities. This, however, refers only to the so-called digestive hypersecretion, as my experience in gastrosuccorhea continua is limited; but in one case of the latter affection that came under my observation a hypoacidity was found in the gastric contents after a breakfast test.

*Heartburn.* This is, when continuous and persistent, a distinct separate gastric neurosis, as it is rarely found in hyperacidity, and is, on the other hand, quite common in some forms of dyspepsia with normal, sub- and even anacidity. In the case of a psychasthenic woman, in whom heartburn was the dominant symptom, the examination of the stomach contents showed an absence of free hydrochloric acid and only a low total acidity. As an experiment, she was given 15 drops of acid mur. dil. after meals, with the result that her heartburn became much worse. This case incidentally illustrates the futility of sending the stomach contents to a laboratory for examination, and basing the treatment upon the findings.

Heartburn is due, not to the acid contents of the gastric juice, but to a hyperesthesia of the gastric mucous membrane, which perhaps accounts for its frequent occurrence in the early stages of some cases of gastric carcinoma, where there is yet some free hydrochloric acid and good motility, and none of the organic acids to which it is usually ascribed. Here, as there, the heartburn, in my opinion, is due to a hyperesthesia of the gastric mucous membrane; but in cancer the hyperesthesia is organic, the result of an accompanying irritation, and in some cases inflammation, of the gastric mucous membrane.

Heartburn differs from hyperacidity in being at times psychogenetic, while the latter is always neurogenetic. The difference between the terms "psychogenetic" and "neurogenetic," while it may be merely metaphysical in theory, is quite concrete and useful in practice. Extrasystoles, discovered in a patient who has no heart symptoms, are certainly neurogenetic; but dyspnea, occurring in a woman patient as soon as she learned that she had a murmur (which turned out to be only functional), is certainly psychogenetic. Pyloric stricture in an infant, if due to nervous influences, is undoubtedly neuro- and not psychogenetic, while the constant and noisy belching of gas which occurs in some cases of heartburn where there is no sign

of either gastric or abdominal distention, is probably psychogenetic. Another difference between hyperacidity and heartburn is that the former yields readily to treatment by diet and alkalies, while these measures have but little influence over the latter, which is indeed, frequently made worse by alkalies.\*

*Diagnosis.* The diagnosis of hyperacidity cannot be made without the use of the stomach tube, as the same symptoms may occur in chronic gastritis and in cases of anacidity in which heartburn is no feature, and which require different treatment.

Hyperacidity, as here referred to, is assumed when the free hydrochloric acid is above 35 and the total acidity above 55. The gastric contents are extracted 50 minutes after a Boas-Ewald breakfast test, and examined, unfiltered, amido-azo-benzol being used for the qualitative and the quantitative determination of the free hydrochloric acid, and the titration with the decinormal sodium hydrate solution is continued until the pink color has almost entirely disappeared. And when, upon the introduction of the stomach tube, there is a sudden gush of a large quantity of a somewhat pale, clear liquid, with but little sediment, the existence of a digestive hypersecretion is assumed.

Hyperacidity is to be differentiated from gastric ulcer and from various other affections in which, according to many authors, it occurs symptomatically, as in gallstones, acid gastritis, chronic appendicitis, nephrolithiasis, chlorosis, chronic constipation, and eye strain. The differentiation from ulcer is easily made by testing the stools for occult blood, which is absent in hyperacidity, and, according to my experience, invariably present in ulcer. From the other affections it is distinguished by the subjective symptoms and objective findings peculiar to these affections. On the other hand, it is somewhat questionable whether the digestive disorders in the above affections, with the exception of gastric ulcer, are actually accompanied by hyperacidity. The observations concerning the nature of these disorders have been only occasional and of isolated cases, and, so far as I know, no systematic examination has ever been made actually to determine this point. This is particularly true of constipation, which, under the name of colonic stasis, has been made responsible, not only for hyperacidity, but also for a variety of other affections. Typical cases of psychoneurosis have been cited by some authors as examples of auto-intoxication due to intestinal stasis, and Penzold even asserts that the bad behavior and ill manners of many children, upon whom punishment has no effect, can be entirely removed by a colonic irrigation. And he even goes so far as to say that adults committing impulsive criminal acts should have

\* Boas, to my knowledge, is the only author who regards heartburn as a separate gastric neurosis; but he does not differentiate it entirely from hyperacidity.

their punishment mitigated if they are found to be sufferers from constipation.

There can be no doubt, however, that the importance of constipation as a cause of disease is here ridiculously exaggerated; and its baneful effects, as described by Penzold and others, are, to my mind, due to metaphysical speculations and not to an accurate observation and logical interpretation of clinical facts. Constipation, according to my observation, is either a secondary or a coördinate symptom of a general or local disorder, and not the cause. In numerous cases of the psychoneuroses, the bowel action is suspended with an aggravation, and resumed with an improvement, of the general condition; in others the constipation disappears while the general condition remains the same. One neurotic young woman, whose symptoms were attributed to colonic stasis, took in one day eight alophen pills, four tablespoonfuls of castor oil, and three enemas, all without any result. But measures directed toward the improvement of her general condition, with oil injections into the rectum, restored the bowel function, without, however, improving the general symptoms. The exaggerated idea among the laity of the importance of open bowels will at times bring about a train of nervous symptoms in patients suffering from habitual constipation, but the symptoms, I am convinced, are not due to constipation as such; they are merely psychogenetic, and can be induced by various other auto-suggestions.

It does not follow, however, that constipation need not be combated, or that it is not likely to aggravate any acute or chronic pathologic condition; exception is merely taken to its being considered a cause of disease.

*Etiology and Pathogenesis.* Hyperacidity and heartburn are practically forms of nervous dyspepsia, and their causes are the same. Nervous dyspepsia is not a local gastric neurosis, in the original sense of von Leube, but a general neurosis with dyspeptic symptoms, the latter being either a symptom or part and parcel of the general nervous disorder. Dreyfus, whose description and classification of nervous dyspepsias has brought order into chaos, divides them into the following two groups, and cites cases to illustrate the different types:—

Group 1. Degenerative psychopathologic conditions with dyspeptic symptoms:

- (a) Psychopathy (psychasthenia, constitutional neurasthenia) with psychopathic reactions as a cause of dyspepsia;
- (b) Psychogenetic dyspepsia;
- (c) Hysteria as a cause of dyspepsia;
- (d) Cyclothymia as a cause of dyspepsia.

Group 2. Acquired neurasthenia with dyspeptic symptoms.

If we accept this classification, it follows that nervous dyspepsia is not a clinical entity, but that it varies according to its etiology, and that it should, therefore, for practical purposes, be

spoken of according to its dominant symptoms, as hyperacidity, heartburn, nervous vomiting, nervous anorexia, etc. Besides, the types as described by Dreyfus, while they clear and define our conception of nervous dyspepsia, are not so easily differentiated in practice, and do not offer any special indication for treatment, which must be symptomatic as well as general.

The conception of nervous dyspepsia as a part of a general neurosis answers the question as to why hyperacidity is occasionally found to exist without causing any symptoms. The explanation, according to my mind, is as follows:—

With a normal nervous system (the term "normal" being relative only) there is also a normal sensibility of the gastric mucous membrane, which is not affected by a little more acid in the gastric juice. With a disordered nervous system, and therefore with a hyperesthetic mucous membrane, an increased acidity will cause an abnormal local reaction. In the severer forms of the neuroses the hyperesthesia of the mucous membrane is increased to such an extent that the mere chyme, with little or no free hydrochloric acid, is sufficient to cause severe gastric symptoms. This view is also in accord with clinical observations, as hyperacidity is usually found in the milder forms, while heartburn, with normal or subacidity, is encountered in the severer forms of the neuroses. This rule, however, has only general and not universal validity, as heartburn may at times be associated with hyperacidity and be present in the severe forms, while normal or subacidity, without heartburn, may be found in the milder forms of the neuroses. But these deviations from the general rule are due, to my mind, to the fact that the neuroses, as found in practice, are not always well circumscribed, but that there is an overlapping in a great many cases.

It may be asked whether a chronic functional disorder of the stomach may not exist independent of a general neurosis, and be due entirely to local causes, such as highly-spiced or over-rich food, or the abuse of tobacco, etc. This question, I believe, must be answered in the negative, unless one agrees with Albu that there is a form of hyperacidity which is a forerunner of gastric ulcer. But this pre-ulcer stage of Albu can no more be substantiated clinically than can the pre-cancer stage of tumors, which is assumed by some authors.

As to the nature of hyperacidity, nothing definite is known. We know from the researches of Pawlow that there is an intimate relation between gastric functions and certain mental and emotional states. But why such states should in some cases give rise to a hyper- and in others to a hypo- or an acidity, is no more known than why such states, which, in the majority of cases, give rise to an acceleration of the pulse, should, in some instances, cause a retardation of the same. The suggestion of Bickel and Rubow that hyperacidity is due, not

to an increased acid secretion, but to either a hypermotility or a hypersecretion, is invalidated by the fact that a hypoacidity is found at times in spite of hypersecretion and normal motility.

The *treatment of hyperacidity* is, aside from measures directed towards the underlying neurosis, mainly dietetic. All sorts and varieties of diets have been recommended; thus Riegel advocated a pure proteid diet, because the proteids, combining with the free hydrochloric acid, diminish the gastric acidity. Albu advocates a lacto-vegetable diet and Juergenson a carbohydrate diet, based upon the experiments of Pawlow, which show that the gastric secretion is less stimulated by these substances than by the proteids. Von Leyden and Klemperer have suggested a diet of stale white bread, which, according to them, absorbs the free hydrochloric acid, but which will hardly satisfy American patients; while von Noorden and Zweig are in favor of a mixed diet, as the latter claims that neither the proteids nor the carbohydrates have any appreciable effect upon the gastric acidity. The same diversity of opinion exists among American authors. After trying several of these diets with more or less success, I have finally adopted a kind of mixed diet, but without meat, as the latter, at the beginning, disagrees with most patients, the proteids being supplied in the form of eggs, cheese, peas, and string beans. It is practically a modified ulcer diet, and is somewhat as follows: The first week, the patient is allowed only stale white bread, butter, eggs, milk, cream, buttermilk, cream cheese, and gelatine. The second week are added breakfast foods and cereals, thoroughly cooked, mashed potatoes, and oysters. The third week, vegetables in purée form, such as string beans, green peas, cooked celery, spinach, asparagus tips, carrots and turnips; lean fish, such as haddock, perch, flounder, pike, pickerel, all boiled or broiled, and cooked fruits. Lean boiled or broiled meats, as chicken, lamb chops, and roast lamb, are not given until the end of the fourth week in the milder cases, and in the severe cases not until the end of the sixth or seventh week. In the milder cases cereals and light vegetables can be allowed from the start. All smoked and salted meats and fish, spices, raw fruit, raw vegetables, salads, pastry, as well as macaroni and spaghetti, are excluded. It is, however, useless to emphasize the negative side of the diet, *i.e.*, telling the patient what not to eat; it is better and simpler to give him a diet list with instructions to eat nothing but what is on the list.

The diet, as here outlined, has been successful in all cases of pure hyperacidity. Whether it has actually reduced the hyperacidity I am unable to tell, as my patients refused a second examination with the stomach tube; but the dyspeptic symptoms have disappeared or have been greatly improved in all cases, even when the general nervous symptoms remained the

same. Most patients also gained in weight, as the diet, even in the first week, can easily be so arranged as to contain about 4500 calories, which is practically an overfeeding in many cases. These dietetic measures are aided by medicinal treatment in the form of alkalies, which are useful in all cases, and indispensable in the case of those patients who have neither the leisure nor the facilities to carry out the prescribed dietetic treatment, and who must have, from the start, a diet which, under other circumstances, is not allowed until the third week. The light magnesia and sodium citrate are preferable to sodium bicarbonate, which causes distention by the carbonic acid it generates; and the effects of the alkalies are enhanced by the addition of bismuth and a small quantity of menthol in the following proportions:

Menthol .....	1. 0
Magnesiæ ustæ, Sodii citrici .....	35. 0
Bismuth subcarb. ....	20. 0

*Sig:* One half teaspoonful in a little water half an hour to one hour after meals.

No laxatives are used, as the medicinal and dietetic measures mentioned are sufficient to maintain bowel action, and it is only in exceptional cases that *pulv. rad. rhei*. 15. 0 is added to the above mixture. Frequent meals, in order to absorb the free hydrochloric acid, as recommended by many authors, have not been found necessary, especially not after the first week, and the appetite improves in most patients when the meals are restricted to three a day.

The *treatment of heartburn* is very unsatisfactory, as it is difficult to arrange a diet which will be suitable to all cases. One woman patient with heartburn, who consulted numerous physicians without obtaining any relief, claimed to have no symptoms on a diet of bread and raw vegetables (radishes, tomatoes, lettuce, onions, etc.) recommended to her by an old Italian woman! When the acidity is normal or slightly subnormal, the dietetic treatment is that of hyperacidity in the third week, although the results are far less satisfactory; but when it is associated with a marked subacidity, the diet is purely empirical. Milk and cream are not well borne by most patients. Some do moderately well on carefully prepared cereals and vegetable purées; others thrive better on boiled or broiled lean meats and fish. The difficulty of the dietetic treatment of heartburn is undoubtedly the reason for the variety of diets recommended for hyperacidity, which most authors confuse with heartburn. As to the medicinal treatment, the alkalies are not only useless, but they even increase the heartburn, and they are regurgitated sour when there is an associated hypersecretion. The bromides, combined with small doses of chloral, act well in a number of cases, but they cannot be continued for any length of time, on account of the disfiguring acne which they produce in these patients after

a few days' use, and the chloral alone does not act so well. In a few cases I have used small doses of opium combined with the tincture of cannabis indica and belladonna, with seemingly satisfactory results.

Hypersecretion occurs either with hyperacidity or with heartburn, and its treatment is that of the condition with which it is associated. Atropine has been highly recommended by Riegel, but it does not seem to have any effect upon the hypersecretion.

No reference has been made to the anomalies of motility, because they do not, according to my observation, dominate the clinical picture, nor do they offer any special indications for treatment. Impaired gastric motility, or motor insufficiency, unless due to stricture of the pylorus, or to some other organic affection (or perhaps to Stiller's disease) is, to my mind, of little moment, and its treatment is completely covered by the treatment of the affection with which it is associated.

#### SUMMARY.

Hyperacidity and heartburn are separate gastric disorders, and both are forms of nervous dyspepsia.

Nervous dyspepsia is either a symptom or part and parcel of a general neurosis.

Hypersecretion is not invariably associated with hyperacidity, as it occurs at times in hypoacidity.

Constipation is either a secondary or a co-ordinate symptom of a general or local disorder, and not its cause.

The nervous symptoms in habitual constipation are psychogenetic, and not the result of an auto-intoxication.

No chronic functional disorder of the stomach exists independently. Any such disorder, when not a part of a general neurosis, is due to some organic affection anywhere within the body.

The anomalies of motility, when functional, are clinically of little importance, and do not require any treatment apart from the treatment of the condition with which they are associated.

Hyperacidity is treated by a carefully selected mixed diet (with the exclusion of meat) and by alkalis.

The treatment of heartburn is empirical.

#### ARTIFICIAL PNEUMOTHORAX.

By HERBERT F. GAMMONS, M.D., CARLSBAD, TEXAS.

THE use of artificial pneumothorax in the treatment of pulmonary tuberculosis has passed the experimental stage. While there is no question but that many patients have been injured by the injudicious use of this remedy, and while undoubtedly many of the published statistics in regard to this subject are so vague

and uncertain as to be useless as a guide for future operations, there is no doubt but that the procedure of artificial pneumothorax, properly carried out, with patients under close supervision, is capable of doing much good. There has been a somewhat too prevalent idea that the absolute rest of the lung caused by the pneumothorax necessarily brought about a cessation of the disease and that no new tubercles developed in the compressed lung. That this is not necessarily the case has been shown by Dr. Allen Krause of Saranac Lake, who has clearly demonstrated that fresh tubercles may develop in collapsed lungs.

The results here presented were obtained at the Texas State Tuberculosis Sanatorium. I am indebted to Dr. J. B. McKnight, the superintendent, and to Dr. J. V. Wright for advice, coöperation and assistance.

By means of the stethoscope and percussion, the best field for operating was selected. The customary apparatus was used, including the "refill needle," as devised by Dr. Shortle. Subcutaneous emphysema was rare, except with the initial puncture. Atmospheric air instead of nitrogen gas was used, Dr. Gerald Webb having shown that nitrogen gas soon became changed into atmospheric air after remaining in the pleural cavity a short while. Except in hemorrhage cases, inflations were given every week. In hemorrhage cases, they were given as indicated. In every instance I endeavored to produce a neutral pressure, except in hemorrhage cases, where the pressure was continued until the bleeding stopped. Patients with an ulcerated process in the lung showed the most improvement in the way of decrease in cough, lessened expectoration and fall in temperature; inflammatory cases showed a decrease in physical signs, but practically no decrease in temperature. All, except two, patients showed an improvement in color. In two instances a collapse could not be produced on account of adhesions; two patients died following treatment, one as a result of miliary tuberculosis, and one following an intravenous infusion.

The following is a brief summary of the cases under treatment:

Artificial pneumothorax was attempted in 53 of these cases—26 were advanced, 14 moderately advanced, and 13 were hemorrhage cases. In two patients, both advanced cases, the process was apparently arrested, while in four moderately advanced cases the disease became quiescent. Ten were improved and are still under treatment, and in seven hemorrhage cases the injections were stopped because the hemorrhage ceased. Four patients left the institution improved, to continue treatment elsewhere. Five left unimproved. In four cases the use of artificial pneumothorax was stopped because of active trouble developing in the opposite lung, or for other reasons.



## CONCLUSIONS.

1. Hemorrhage can be treated by lung compression with best results if not continued after bleeding is controlled, in bilateral cases.
2. The opposite lung must be carefully watched, while in addition, as stated by Hawes of Boston, the patient should be under the closest supervision, preferably in a sanatorium.
3. Ulcerative cases promise the best results, and if a patient is doing well, inflation should not be undertaken.
4. The best results follow the frequent inflations with small amounts of air in cases where the opposite lung is well or has an apparently healed lesion.

## LIPOIDS IN 131 DIABETIC BLOODS.

BY HORACE GRAY, BOSTON.

[From the Department of Biological Chemistry, Harvard Medical School.]

(Continued from page 55.)

## AVERAGE AND MAXIMUM OF THE VARIOUS LIPOIDS IN DIABETES.

TOTAL-FAT averages twice normal, and may rise to about 20 times normal. Still greater rises are in the literature.

Total-fatty-acid averages to increase by 140% in the plasma, half as much as in the corpuscles, and may rise to about 34 times normal in plasma.

Averages for lecithin increase less in diabetes than those for any other lipid, the level in the plasma being only 50% above normal, and in corpuscles actually a trifle below normal. The greatest rise in lecithin is to only 5 times normal, in plasma.

Cholesterol averages show a greater augmentation above normal than lecithin, but still much less than total-fat and total-fatty-acid. The maximum was less than 10 times normal. This rise in cholesterol, however, seems to be pathognomonic of chronic hyperlipemia, *e.g.*, diabetes *vs.* a rise in T.F.A. alone, as occurs in acute hyperlipemia, *e.g.*, overfeeding.

Glyceride averages increase in diabetes far more than those for any other lipid, not only in the plasma, but especially in the corpuscles, by 460%. The maximal values were colossal, that for plasma reaching 94 times the average value in normal people. The increase in the corpuscles is untrustworthy, partly because of its extent relatively, partly because of its extent absolutely; the figures vary from minimal amounts around 1/20 of 1%, up to 3% in severe cases, when the glycerides in the corpuscles are higher alone than the total lipoids probably ever reach in alimentary lipemia of normal people.

Ratio  $\frac{\text{T.F.A.}}{\text{L.}}$  shows again the familiar fact that in diabetes, whether we consider the aver-

age or the extreme case, the T. F. A. increases faster than the L. Considering the averages, the diabetic ratio is 55-73% higher than normal; while the extreme diabetic ratio may be 13 times normal. In other words, such a patient has 24 times as much T.F.A. as L.; instead of having about twice as much, as would be the case with a normal person.

Ratio  $\frac{\text{L.}}{\text{C.}}$  by its decrease in diabetes shows again that as those two cytolipoids increase the L. lags behind the cholesterol, in the average diabetic, especially in the corpuscles, while in the extreme case more markedly in the plasma.

The total-lipoids' average increase was 115% in excess of normal, while in the severest hyperlipemia the figure reached 24 times the normal average. This 16.34%, the maximal value of my series, is still below 19.7%, the highest Neisser, E., and Derlin, L.: Ueber Lipämie, Zts. f. klin. Med., 1904, II, 428-438.

"fully-accepted" in the land of its production, according to Allen, and still more below the figure of 27%\* accepted by Magnus-Levy.

Allen, F. M.: *l. c.*, p. 813.

\*Frugoni, C., and Marchetti, G.: Beitrag zum Studium der diabetischen Lipoidämie, Berl. klin. Wch., 1908, xlv, 1844-1846.

Magnus-Levy, A., and Meyer, L. F.: Die Fette im Stoffwechsel, in Oppenheimer, C., Handbuch der Biochemie IV, 1, Jena, 1911, p. 464.

Comparison of the highest diabetic value in each column with the average normal is shown in Table XIII. In calculating the per cent. above normal, the normal has first been subtracted from the diabetic, then the difference divided by the normal. That is, if a diabetic value happened to be 0.40 compared with a normal of 0.20, it would be expressed here as "100% above normal," not as "200% of normal," an idea which would here be expressed as "twice normal." For the average normal I have added together all Bloor's figures from the 12-14 men (some of the determinations were not done on two of these) and the first 7 women, and divided through by 19, 20 or 21 in the proper places. In the table, for convenience' sake, I have, however, regularly used the number 21. This series, though small, is as yet the only standard available for the values as a whole; though for some of them, notably cholesterol, normals by other observers might be cited. Denis gives normal cholesterol figures for the whole blood from 6 women and 14 men, which when averaged together are found to equal 0.22%, still the same as Bloor's.

Denis, W.: Cholesterol in Human Blood, Jour. Biol. Chem., February, 1917, xxix, 93-110.

The greatest value *absolutely* is (of course) total-lipoids 16.34 g. per 100 cc., while the greatest *increase* (above the average normal person's level) is in a different column: Glycerides in whole blood, 9292% excess, *i.e.*, 94 times the normal.





## VARYING BEHAVIOR OF LIPOIDS IN PLASMA AND CORPUSCLES.

**Total-fatty-acid.** The average in plasma is twice as far above normal as in corpuscles, while the extreme is four times as far in excess.

**Lecithin.** The average in plasma is here hardly comparable with that in corpuscles, one being 50% above normal and the other practically normal. The maximal increase is twice as great in plasma as in corpuscles.

**Cholesterol.** The average in plasma is six times as far above normal as in corpuscles, while the extreme is something under four times as far above.

**Glycerides.** The averages in plasma and corpuscles show about the same increase, while the extreme rises somewhat more in the plasma than in the corpuscles.

On the whole, the *corpuscles* show increased values, which, while distinctly less than plasma increases, still seem more marked than the present literature suggests. That the greater lipid rise should occur in the plasma is to be expected from extant analyses for other substances in plasma and corpuscles.

## INFLUENCE OF ANESTHESIA.

Four bloods were analyzed from patient 1228. Total-fat and total-fatty-acid were increased immediately after ether, with subsequent fall to subnormal. Lecithin and cholesterol were unaffected.

The specimens will now be taken up in relation to various headings. Each heading in turn will be subdivided into groups, which are necessarily arbitrary. Opposite each group-title will be given the lipid averages of all blood specimens which have fallen in that group.

## SEX.

In diabetic men and women there is no significant difference of lipid level as is shown in Table XV. My averages were made after exclusion of the 17 male and 5 female specimens which had been marked 1-8 because of some peculiarity, as detailed elsewhere.

TABLE XV.

	SEX.			
	Comp.	T-F.	L.	C.
	%	IN W. B.	IN W. B.	IN W. B.
Av. of values among 50 female diabetics	39	1.11	0.86	0.82
Av. of values among 57 diabetic males..	40	1.12	0.85	0.81

On examining the results reported by other observers who have used the same method, one finds there also no marked difference between the sexes. One finds incidentally somewhat lower values for cholesterol and much lower values for fat by Bloor's method; apparently Bloor's and Denis' cases were milder than mine. The number of specimens to each average are included in brackets.

TABLE XVI.

	SEX.			
	BLOOR	DENIS	GRAY	
<i>Bloor's Fat-Method</i>				
Women ...	0.78 (15)		1.11 (50)	
Men .....	0.83 (19)		1.12 (57)	
<i>Lecithin</i>				
Women ...	0.37 (15)		0.86 (50)	
Men .....	0.36 (19)		0.85 (57)	
<i>Cholesterol</i>				
Women ...	0.28 (15)	0.23 (18)	0.82 (50)	
Men .....	0.29 (19)	0.25 (12)	0.81 (57)	

It is interesting to consider the normal, which has been found higher in women than in men. Bloor found this true for T.F.A. in plasma, for L. in corpuscles, for C. both in plasma and corpuscles (or whole blood), for glycerides in plasma. In Gettler and Baker's normals, also, Lawrence and Riddle call attention to the much higher female average for total-ether-soluble ("fat" + cholesterol).

Lawrence, J. V., and Riddle, O.: Sexual Differences in the Fat and Phosphorus Content of the Blood of Fowls, *Am. Journ. Physiol.*, 1916, xl, 430-437.

These authors also give evidence that female (fowl) plasma is richer in "alcohol-soluble" fat and phosphorus than the male.

It is still richer in the hens when laying, and here again they point out the similarity to Gettler and Baker's figures, showing a far higher fat average for two women of 30-35 years *vs.* three women of 48-59, *i.e.*, presumably past their ovarian activity. The latter point may be supported also by an *average* 0.23 which I have struck from the figures given by Denis for whole blood cholesterol in 12 pregnant women, although she seems unwilling to consider her *individual* figures significant. "No increase was noted." The average for her six non-pregnant women would be lower, however—0.19%.

Eccalle found that cholesterol gradually increased as pregnancy advanced.

Eccalle, G.: Fat and Lipoid Content of the Serum of Pregnant Women, *Archives mensuelles d'obstetrique et de gynécologie*, July 15, 1917, vi, 128.

On the other hand, *lower* female cholesterol values as against male have been pointed out by Lawrence and Riddle in Gettler-Baker's figures; these, however, seem much too low to be considered except possibly in a relative way.

## DURATION.

The longer the duration of the disease, the *lower* the lipoids, as seen in Table XVII. This may be explained in at least two ways: long-standing cases are too emaciated to pile up excess fat in the blood, or cases that do pile up high lipoids are too severe to live long.

## PROGNOSIS.

Do the lipoids help to foretell how long the patient will live? To determine this, the bloods of the fatal cases and the living cases have been grouped separately; the former happened to fall

TABLE XVII.

## INFLUENCE OF DURATION.

DURATION	No. of Bloods	BLOOD LIPIDS IN PER CENT.										T. F. A. L.	L. C.		TOTAL LIPIDS						
		TOTAL-FAT					TOTAL FATTY ACIDS														
		W. B.	Pl.	W. B.	Pl.	Ops.	W. B.	Pl.	Ops.	W. B.	Pl.		Ops.	W. B.		Pl.	Ops.				
Under 1 yr.	26	1.04	1.28	0.77	0.90	0.53	0.33	0.29	0.41	0.26	0.33	0.20	0.63	0.28	2.23	2.97	1.23	1.30	0.96	2.19	1.33
1 yr.—1 yr. 11 mo.	32	1.23	1.50	0.84	1.04	0.51	0.38	0.37	0.43	0.36	0.45	0.23	0.63	0.23	2.03	2.61	1.33	1.21	0.84	1.95	1.66
2 yr.—2 yr. 11 mo.	13	2.03	2.38	1.36	1.69	0.92	0.44	0.43	0.40	0.63	0.60	0.27	1.28	0.75	3.29	1.39	2.33	0.97	0.78	1.79	2.61
3 yr.	1	1.46	1.80	1.01	1.21	0.74	0.41	0.45	0.35	0.45	0.59	0.26	0.69	0.52	2.46	2.69	2.11	0.91	0.76	1.35	1.97
4 yr.—4 yr. 11 mo.	6	0.86	0.99	0.63	0.67	0.31	0.34	0.27	0.44	0.28	0.37	0.32	0.23	0.12	1.57	2.45	0.76	1.23	0.90	1.91	1.09
5 yr.—5 yr. 11 mo.	8	1.00	1.08	0.68	0.73	0.39	0.34	0.35	0.37	0.32	0.36	0.26	0.38	0.13	1.79	2.36	1.13	1.15	0.97	1.37	1.20
6 yr.—6 yr. 11 mo.	12	0.97	1.24	0.67	0.87	0.53	0.35	0.32	0.39	0.29	0.37	0.18	0.46	0.30	1.88	2.55	1.44	1.20	0.89	2.12	1.32
7 yr.—7 yr. 11 mo.	3	0.83	0.96	0.59	0.66	0.49	0.32	0.26	0.41	0.24	0.29	0.18	0.38	0.22	1.85	2.72	1.19	1.37	0.96	2.27	1.05
8 yr.—8 yr. 11 mo.	4	0.87	0.89	0.61	0.69	0.50	0.31	0.21	0.45	0.21	0.21	0.21	0.48	0.20	1.93	3.30	1.10	1.52	1.00	2.21	0.98
9 yr.	1	0.84	1.00	0.53	0.68	0.32	0.35	0.31	0.41	0.31	0.32	0.29	0.35	0.04	1.51	2.19	0.78	1.13	0.97	1.41	1.11
10 yr.—19 yr. 11 mo.	13	0.86	0.96	0.63	0.69	0.50	0.31	0.25	0.39	0.23	0.26	0.20	0.43	0.23	1.98	2.82	1.27	1.37	0.99	1.87	1.04
20 yr. and over, max. 22 yr.	3	0.76	0.80	0.51	0.55	0.44	0.29	0.23	0.38	0.25	0.25	0.24	0.30	0.18	1.72	2.41	1.16	1.25	0.96	1.79	0.89

into three groups of odd periods, as seen in Table XVIII, while the living could be bunched symmetrically according to the number of months elapsed since the bloods were taken.

TABLE XVIII.

## RELATION OF LIPIDS TO PROGNOSIS.

DURATION AFTER BLOOD WAS TAKEN TO DEATH, OR 1 JUNE, 1917.	No. of Bloods	BLOOD LIPIDS IN PER CENT.																T. F. A. L.	L. C.		TOTAL LIPIDS	
		TOTAL-FAT					TOTAL FATTY ACIDS					Lecithin		Cholesterol		Glycerides						
		W. B.	Pl.	W. B.	Pl.	Ops.	W. B.	Pl.	Ops.	W. B.	Pl.	Ops.	W. B.	Pl.	Ops.	W. B.	Pl.		Ops.			
<i>Fatal</i>																						
14 hrs.—16 d. ....	4	1.85	2.25	1.48	1.75	0.98	0.50	0.48	0.45	0.37	0.50	0.18	1.33	0.70	3.60	2.51	2.12	1.12	0.89	2.56	2.60	
2½ m.—4 m. ....	4	1.54	1.75	1.19	1.65	0.95	0.39	0.32	0.50	0.36	0.44	0.26	0.96	0.63	2.92	3.91	2.00	1.17	0.78	2.12	1.89	
8 m. 6 d.—9 m. 9 d.	6	2.95	3.62	2.27	2.28	1.40	0.47	0.51	0.34	0.67	0.85	0.30	2.19	1.64	4.84	5.45	3.81	0.72	0.63	1.44	3.88	
<i>Living</i>																						
2 mos. ....	11	1.06	1.36	0.66	0.87	0.37	0.39	0.37	0.43	0.41	0.49	0.27	0.44	0.11	1.66	2.38	0.87	0.98	0.77	1.68	1.40	
3 mos. ....	23	1.03	1.31	0.66	0.86	0.38	0.38	0.35	0.41	0.37	0.42	0.24	0.45	0.11	1.68	2.53	0.90	1.18	0.83	1.83	1.38	
4 mos. ....	11	1.28	1.73	1.07	1.36	0.65	0.38	0.31	0.45	0.31	0.32	0.22	1.02	0.35	2.62	2.63	1.44	1.32	0.94	1.69	1.68	
5 mos. ....	15	0.93	1.09	0.66	0.75	0.53	0.33	0.29	0.39	0.28	0.32	0.21	0.44	0.28	1.95	2.66	1.39	1.24	0.94	1.94	1.20	
6 mos. ....	14	0.80	0.87	0.54	0.60	0.46	0.33	0.25	0.43	0.26	0.26	0.20	0.33	0.18	1.66	2.46	1.08	1.35	0.97	2.24	0.96	
7 mos. ....	11	0.95	1.06	0.66	0.74	0.45	0.35	0.31	0.40	0.29	0.32	0.23	0.40	0.21	1.64	2.41	1.27	1.21	0.97	1.77	1.16	
8 mos. ....	1	...	0.78	...	0.56	...	...	0.23	...	...	0.22	...	0.83	...	...	2.43	...	...	1.06	...	0.87	
9 mos. ....	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 mos. ....	11	0.78	0.87	0.56	0.63	0.48	0.31	0.22	0.40	0.22	0.25	0.18	0.38	0.20	1.86	2.65	1.19	1.48	1.01	2.23	0.96	
11 mos. ....	6	1.01	1.13	0.78	0.83	0.47	0.31	0.30	0.34	0.23	0.30	0.13	0.53	0.25	2.17	2.79	1.55	1.69	1.21	2.98	1.24	
12 mos. ....	5	0.99	1.07	0.78	0.86	0.64	0.27	0.23	0.33	0.21	0.22	0.18	0.64	0.44	2.79	3.81	2.02	1.88	1.08	1.90	1.17	

The dead show higher values than the living, most markedly in total-lipids; 2, total-fat; 3, total-fatty-acid; 4, glycerides; 5, cholesterol; even 6, in lecithin rather strikingly.

(To be continued.)

## THE BOSTON Medical and Surgical Journal

Established in 1818

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, JANUARY 17, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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## THE PROGRAM OF THE STATE DEPARTMENT OF HEALTH AGAINST VENEREAL DISEASE.

FOR the past three years the State Department of Health has been maturing a comprehensive program of attack on venereal disease.

Two and a half years ago the State Commissioner of Health, Dr. A. J. McLaughlin, instituted the policy of extending free Wassermann laboratory service to all physicians and institutions throughout the State.

At the 1916 session of the Legislature he asked and received authorization by a legislative resolve to expend \$10,000 in research, and if successful to manufacture, for free distribution to the institutions and medical profession of the Commonwealth, salvarsan or any analogous product.

The laboratory experimentation has been successful, and a product which has been named "Arsphenamine" has been obtained and is now being produced on a wholesale basis.

Throughout this period the Department has studied and sought all possible information in reference to the advantages and disadvantages of requiring reports of venereal diseases in any form. It has also studied carefully the question of providing facilities for early diagnosis and prompt, efficient treatment that would be both easy of access, within the financial resources of all classes, and at the same time be as far as possible removed from the stigma of the traditional "Clap Clinic." It has also been a constant object to have such institutions so designed that they would form an integral part of the method of distribution of arsphenamine, that they would be as little as possible competitive so far as the private practitioner of medicine is concerned, and, above all, that they should be placed on a high ethical plane and serve as centers of education and prevention, as well as of cure.

The Department has always believed that logically the question of reporting should, chronologically at least, be taken up after the completion of the program for the extension of means of diagnosis and treatment. This is practically the same conclusion reached by the British Royal Commission on Venereal Disease.

Along with many other things, the effect of the war has been to "speed up" the order of development of the Massachusetts Venereal Disease Program, published on another page of this issue.

The War Department, in addition to its own comprehensive measures for keeping inefficiency from venereal disease among troops at a minimum, has strongly urged the extension of programs of reporting diagnosis and treatment, and of general education in reference to venereal disease, upon all civilian health authorities, as seriously needed war measures. Practically all the measures advocated by the War Department were already provided for in the plans of the Massachusetts State Health Department, but the medical profession is reminded that in a very vital sense this whole program has taken on an added national significance and has become a *war measure*; partly because of the strong stand taken in favor of such an immediate step by the Federal authorities, it has been decided to modify somewhat the original policy of procedure in one particular.

Instead of leaving the question of venereal disease-reporting until the machinery for arsphenamine distribution and the extension of

diagnostic and curative centers, and of general popular education in venereal disease problems, was in smooth running order, it has been decided to launch the entire program simultaneously. The abnormal conditions resulting from the war demand the crowding into a few months of a program of development that in normal times might be better assigned to several years of gradual evolution.

#### NURSES IN THE UNITED STATES ARMY.

THE United States Army is in need of nurses for immediate assignment to duty and for reserve. It is confronted by the task of increasing the enrolment nearly 1000% to procure 37,500 nurses, who will be needed for an army of 1,500,000. The present strength of the Army Nurse Corps is but 4000.

The need for nurses in Army hospitals in this country and for duty overseas is urgent, but the enrolment has not met the demands by a large number. Hospitals at National Guard and National Army camps still need 290 nurses to bring the quotas up to the necessary minimum of 65 nurses to each hospital.

Since the urgent need for more nurses was announced in December over 2000 requests for application blanks have been received; 400 nurses have applied for enrolment and many have been accepted. About 650 nurses have been obtained through the Red Cross during the same period.

The call to duty is made to every one of the 80,000 registered and 200,000 other graduate and practical nurses in the United States. That the enrolment has not been larger is due, it is believed, to the lack of realization by American nurses of the immediate need of their services. The Army Nurse Corps impresses the profession with the urgency of that need.

Besides the number needed for immediate assignment to duty, there must be a reserve for call when American casualties increase. As soon as the immediate needs of cantonment hospitals have been cared for, a reserve of 100 nurses will be organized for emergency service in the United States. The Lakewood Hotel at Lakewood, N. J., has been leased by the Government for use as a general hospital, and provisions will be made for housing nurses there.

Because of the immediate need of nurses and to encourage enrolments, a number of the re-

quirements heretofore imposed have been waived.

Requests for information, applications and enrolment should be made to the Surgeon-General, U. S. Army—attention of Superintendent, Army Nurse Corps, Mills Building, Washington, D.C., or to the Director, American Red Cross Nurse Service, Washington, D. C.

#### THE MILITARY SIGNIFICANCE OF CEREBROSPINAL MENINGITIS.

WHEREVER there is a great assemblage or concentration of troops the sanitary provisions must not only be pressed in every direction generally, but any special tendencies associated with such concentration must receive special attention. Measles, scarlet fever and pneumonia, although common, need no special attention. On the other hand, it has long been the experience in war times that cerebrospinal meningitis would break out in severe epidemic form in localities where it had, previous to concentration, rarely been known to occur. Such epidemics would then not be confined to the military population alone, but extend to the civilian population. Many epidemics are known to have swept European troops during previous wars, hence the name "troop disease" long associated with cerebrospinal meningitis. The disease seems to be very common in the infant population in civil life, and in troops no matter what the ages. The control of epidemics is not difficult when there is preparation for it. However, the severe outbreak of the disease among British troops in England in the winter of 1914 and 1915 was due to a lack of preparation. Horder notes that there was not even a manual published at the time by which the physician could be guided in preventive measures and in treatment. It must be remembered that not all cases of cerebrospinal meningitis have the classic symptoms or course commonly associated with the disease. The early symptoms or the whole course of a mild attack closely simulates an influenzal attack. Of course, where the disease is known to be epidemic, such symptoms will put everyone on guard, otherwise the true significance of such symptoms will be almost certain to be overlooked. Yet the same relation as exists between diphtheria and tonsillitis must

be established between influenzal symptoms and cerebrospinal meningitis if the disease would be detected before epidemic proportions have set in. Both influenza and epidemic cerebrospinal meningitis are most common in the winter and spring seasons. Both of them are closely associated with disturbances located in the nasopharynx. Indeed, the exclusive habitat of the diplococcus of Weichselbaum seems to be in the nasopharynx. Cultures can easily be obtained from this locality in active cases and from carriers. Cultures can be obtained positive very early in the disease, and in the mild as well as the severe cases. In the later stages of the disease the coccus begins to disappear from this locality. But the carrier may have it a long time, and he is believed to be the factor in keeping the disease alive in a community. The detection of the carrier is the most important problem in the suppression, but without this detection progress must be unsatisfactory. The mildness of the disease in one individual is no indication of the severity of the disease he will transmit.

For the detection of carriers or the mild and transitory cases, it is necessary to make frequent cultures from the nasopharynx of those suspected of harboring the diplococcus. Isolation must follow the detection of such an individual. For active treatment nothing holds forth so much hope as the serum treatment of Flexner; but it must be given early if the mortality would be reduced within reasonable limits. Where the serum was given between the first and the third days, Flexner found that the mortality was reduced to 18%. After the seventh day the mortality rose to 36%. The serum treatment of cerebrospinal meningitis has reduced the general mortality from 80 to 30%. Greater reduction can be expected only when every influenzal condition in a suspected area will mean a culture, and if positive, immediate isolation and serum treatment. This disease being primarily a catarrhal affection, is spread by the so-called "droplet" method. The secretions of the nasopharynx are carried to sensitive individuals by contact, by coughing, sneezing, etc. The education of the public against such bad habits, in respect to the careless dissemination of secretions from this locality during catarrhal attacks, or even during apparent

health, will do much to reduce the morbidity from this disease. In respect to the prevention of this disease, the substitution of the tent and shack for the barracks will do much to eradicate this disease from among them.

#### TREATMENT OF LEUKEMIA.

ALTHOUGH the exact provocative agent or condition in leukemia is as yet unknown, it is understood that the disease is due to some pathological disturbance in the blood-forming system which causes numerous mature and immature leucocytes to enter the blood stream. The blood-picture caused thereby is both interesting and familiar to nearly every observer. The change in the blood-picture is, of course, both as to quality and quantity, both having almost the same importance, but differing somewhat according as one blood-forming tissue or another is more affected. The treatment of this disease has thus far been very unsatisfactory. The particular type of leukemia found in any case is governed by hyperplastic changes in the splenomyelogenous or lymphatic tissues, as the case may be. The aim of treatment would seem to be a destruction of these hyperplastic elements and a regeneration of the blood-forming elements so that they would produce only stable and resistant cells. While hypoplasia can readily be produced by some form of therapeusis, unless the blood-forming elements are themselves regenerated there is recurrence, and often with markedly increased severity; and it is toward this latter aim that more certain therapeutic measures must be found. It had long ago been observed that after acute infectious diseases arising in leukemic individuals there occurred marked remissions in this disease, probably because of the destructive effect on the cells by the infective organism or the inhibitory effect of the toxin on the blood-forming system. Arsenic, likewise, has caused much improvement in the disease, but only of a temporary character. Tolerance to the drug or the fact that arsenic is not definitely and selectively destructive to these tissues may account for the absence of any lasting value.

The first great step in the treatment of this disease was made, however, by the Roentgen rays. It seems that the effect of these rays is to cause a most rapid degeneration of the cells, so that they die in a very short time, or they

may even be killed outright on the application of the rays. But after the prolonged application of the Roentgen rays to the blood-forming tissues, the spleen, bone marrow or lymphatic glands, there occurs a readjustment to this destructive effect of the rays, and although the young and the parent cells are diminished, their production is not checked altogether, but the cells produced are more resistant types. The progress of the leukemia is slowed, but not destroyed. On the other hand, this slowing may even be followed later by a greatly increased activity in cell production and a severe relapse.

But the observation of von Koranyi on the effect of benzol poisoning on girls employed in the factories utilizing this chemical, gives hope that at last a more certain form of treatment has been found. Von Koranyi found that the drug first stimulated the marrow to leucocytic action, but that later there occurred a distinct hypoplasia. If employed to excess, the aplastic anemia can be fatal. In the treatment of this disease with benzol, symptoms of poisoning must be carefully watched, and when there are headache, anemia, bladder and kidney irritation the drug must be discontinued for a long time, because its action lasts a long time after discontinuance. The reduction of the white blood cells to below 20,000 must be the lowest limit of therapeutic application. It seems that, while the action of benzol is much slower than the Roentgen rays, its effect is more lasting and more certain, especially in the chronic stages of the disease. The best results will probably be obtained by the use of both therapeutic measures,—benzol and the Roentgen rays,—but the effect must be carefully watched. It is essential that blood examinations be frequently made, so that treatment is not continued beyond a safe reduction of the cell count. Yet, in spite of the good results with benzol reported by some observers, it is too early to say whether results will be lasting or whether a specific has been unearthed for the treatment of this serious malady.

#### MILITARY PSYCHIATRY.

EARLY in the present military scheme it was realized that the mental development and the mental prophylaxis and treatment of the soldier are an essential part of military medicine in order to get the greatest military efficiency. It

is not sufficient that the soldier is fit physically but he must at least be normal as to his mental capacity and be free from active mental disorder. It is even necessary to go further in order to discover such latent mental possibilities as might become patent under the rigors of military life. In keeping with the highly specialized devices of modern warfare, the mental requirements of the soldier must rise accordingly, lest his availability be much restricted. American recruiting officers are now paying much attention to weeding out the mentally unfit from entrance into military life. Schier (*U. S. Naval Bulletin*, July, 1917) found that of those accepted as physically eligible by recruiting officers, about 12% fell below requirements mentally. Of course the detection of the feeble-minded is necessary because of the effect upon efficiency and discipline a few feeble-minded soldiers would have upon a military unit, but it is more important to detect them because it is shown by tests that so many of the apparently feeble-minded are either frank cases of dementia precox or are feeble-minded but with a dementia precox engrafted during service; and the care of an insane soldier is more trying, at least, than any other casualty. Most of the engrafted cases of dementia precox conform to the milder type known as hebephrenia, and it is for this reason that they are so likely to escape detection as insane.

Perhaps more important from a recruiting standpoint than the detection of frank cases of feeble-mindedness or insanity, is the detection of the psychopathic personality, in whatever form manifested. This is always a difficult task, even for the trained psychiatrist, but it is important, nevertheless, because the discipline, the stress, or any necessary repression, would be a sufficient provoking force to create an active psychosis. But while the recruiting officer must be on the alert to exclude the defective, he must be just as alert in detecting the malingerer among those who try to feign defect or mental disorder in order to escape military service. Yet when both these eventualities have been settled by careful regard for mental conditions, the presence of mental conditions among a military force must be regarded as the normal incidence among any people, even in civil life. The new and unusual circumstances under which a soldier must live may produce some mental disturbances that would otherwise



not occur. Moreover, because of the high pressure in which the medical and surgical work must be done during active military operations, this type of morbidity is undetected or, if detected, must go unprovided for. It is for this reason that the Surgeon-General of the Army has established a psychiatric arm to the medical organization. It is intended that each medical unit have among its personnel neuro-psychiatrists, who would be useful not only in the detection and in the treatment of the mentally ill, but would be a valuable asset in developing mental hygiene among the soldiers and in indicating the methods for the reduction of the psychogenic factor in military life. It is known that certain psychological factors, in respect to tools, working time, environment, etc., influence the efficiency and well-being of the worker in industrial pursuits, and the same principle in respect to military life can be developed by the psychiatric units. Such determinations, together with the general care and the treatment of the mind of the soldier, would go a long way to eliminate much of the post-bellum mental disturbances, for which the soldier must be mustered out and cared for, and which unnecessarily help to swell the already too crowded class of the insane.

## MEDICAL NOTES.

### WAR NOTES.

**NEED OF NURSES IN GOVERNMENT SERVICE.**—Announcement comes from Washington that the Army has only 3600 nurses enrolled for Government service, while on the basis of an Army of 1,500,000 men there will be a need of 37,500 nurses. There are between 80,000 and 90,000 registered nurses in the country and about 200,000 other graduate and practical nurses. Hospitals at National Guard and National Army camps still need 371 nurses to bring the quotas of all up to the minimum of 65, considered necessary for each.

**ANXIETY ABOUT AMERICAN PHYSICIAN.**—Dr. William S. Thayer of Johns Hopkins University, who went to Russia with a medical commission, has not been heard from for some time, and it is feared that he may be in danger.

**DEATHS AMONG AMERICAN TROOPS IN FRANCE.**—Report from General Pershing, made public on January 2, stated that there had been 24 deaths among American troops and one death of a nurse. Pneumonia and its complications were responsible for 11 deaths, meningitis for 4, and tuberculosis for 1.

**DEATHS AMONG AMERICAN TROOPS IN ARMY CANTONMENTS.**—Report for the week ended December 22 states that in the National Army there were 118 deaths, as against 97 for the week before, and in the National Guard 120, as against 165 for the week previous. Between the dates of September 21 and December 14 there were 1391 deaths in the Regular Army, the National Army and the National Guard. Of that number, there were 144 deaths in the Regular Army, which had an average strength of 202,009 men in the United States; 494 deaths in the National Army, which had an average strength of 387,233 men in the United States; and 753 deaths in the National Guard, which had an average strength of 327,480 men in the United States.

**INNOVATION ON HOSPITAL SHIPS.**—Two hospital ships which are being equipped for the use of the Navy will carry women nurses, for the first time in the history of the American Navy. The ships will be called the *Comfort*, formerly the Ward liner *Havana*, and the *Mercy*, formerly the *Saratoga* of the same line. The ships will accommodate 300 patients each. Surgeon R. C. Holcomb, now assistant to Surgeon-General Braisted, will command the *Comfort* and Medical Inspector Norman J. Blackwood, now in charge of the hospital ship *Solace*, will have charge of the *Mercy*.

**WAR RELIEF FUNDS.**—On January 12 the totals of the principal New England war relief funds reached the following amounts:

Armenian and Syrian Relief . . .	\$278,875.37
Italian War Relief . . . . .	122,292.43
Friends of Poland . . . . .	96,387.73

### BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending January 5, 1918, the number of deaths reported was 298, against 317 last year, with a rate of 19.81, against 21.40 last year. There were 49 deaths under one year of age, against 33 last year.

The number of cases of principal reportable diseases were: diphtheria, 104; scarlet fever, 23; measles, 117; whooping cough, 1; typhoid fever, 1; tuberculosis, 38.

Included in the above were the following cases of non-residents: diphtheria, 9; scarlet fever, 5; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 15; scarlet fever 1; measles, 4; whooping cough, 1; typhoid fever, 1; tuberculosis, 21.

Included in the above were the following non-residents: diphtheria, 2; measles, 1; tuberculosis, 1.

**HOSPITAL BEQUESTS.**—By the will of the late Zenas Crane of Pittsfield, Mass., the House of Mercy Hospital of that town receives a bequest of \$25,000. By the will of the late Charles C. Barney of Brookline, the following institutions will receive \$1000: Boston Home for Incurables, Massachusetts Society for the Prevention of Cruelty to Children, New England Peabody Home for Crippled Children, Massachusetts Society for the Prevention of Cruelty to Animals, and the Boston Nursery for Blind Babies. Upon the death of the last beneficiary the estate will be divided between the Massachusetts General Hospital and Harvard College.

### The Massachusetts Medical Society.

#### NOTES FROM THE DISTRICT SOCIETIES.

##### DISTRICT CORRESPONDENTS.

*Bristol North*, ARTHUR R. CRANDALL, M.D., Taunton.  
*Berkshire*, A. P. MERRELL, M.D., Pittsfield.  
*Bristol South*, EDWIN D. GARDNER, M.D., New Bedford.  
*Essex North*, T. N. STONE, M.D., Haverhill.  
*Essex South*, H. P. BENNETT, M.D., Lynn.  
*Hampden*, LAURENCE D. CHAPIN, M.D., Springfield.  
*Hampshire*, E. B. THOMAS, M.D., Northampton.  
*Middlesex South*, WILLIAM C. HANSON, M.D., Belmont.

**HAMPDEN DISTRICT.**—The regular meeting of the Hampshire District Medical Society was held January 10. Dr. S. A. Clark addressed the meeting on Pulmonary Embolism. Voted that the members absent on war service be exempted, if they so desire, from special assessments.

C. T. COBB,

*Secretary and Correspondent, pro tem.*

### Obituary.

#### SAMUEL WILLIAM TORREY, M.D.

DR. SAMUEL WILLIAM TORREY, a retired Fellow of the Massachusetts Medical Society, died at the Beverly Hospital after a short illness January 1, 1918, at the age of 74.

He was the son of Dr. Augustus Torrey of Beverly, who died in 1880 at the age of 75, and was educated at the University of Vermont, receiving an A.B. in 1865 and an M.D. three years later from the College of Physicians and Surgeons, New York. He had practised in Beverly all his life, retiring in 1909. He was one of the founders of the Beverly Hospital and had served on the school board. He is survived by five married daughters.

#### ROYAL HATCH, M.D.

DR. ROYAL HATCH, chairman of the board of health in Wellesley, died at his home in that town, Dec. 30, 1917, after an illness of two weeks.

Pneumonia was the cause of death. Dr. Hatch was born thirty-nine years ago in Strafford, Vt., and attended St. Johnsbury Academy. He was graduated from Dartmouth in 1900, and from the Harvard Medical School in 1904. While at Dartmouth he was prominent in athletics. After graduating from Harvard, he was house officer and later assistant superintendent at the Massachusetts General Hospital. He specialized in tuberculosis, and maintained an office in Newbury Street, Boston. About nine years ago he removed to Wellesley and engaged in general practice. Dr. Hatch leaves a wife, who was Miss Edith Noera of Waterbury, Conn., and two small children.

He was a Fellow of the Massachusetts Medical Society and a member of the American Medical Association.

### Miscellany.

#### THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

BY EUGENE R. KELLEY, M.D.

THE Massachusetts Venereal Disease Program may be separated into four general divisions:

1. Venereal Disease Reporting.
2. The Problem of Extension of Facilities for Diagnosis and Early Treatment.
3. Repressive Measures.
4. Educational Measures.

##### I. VENEREAL DISEASE REPORTING.

On December 18, 1917, the Public Health Council of the State Department of Health voted to add gonorrhea and syphilis to the list of diseases declared dangerous to the public health.

This question of requiring the venereal diseases to be reported has created a very vigorous controversy during the past few years throughout the world. California, several years ago, required by regulation of the state board of health that cases of gonorrhea and syphilis should be reported by serial number or initials. Several states and municipalities have followed this example. Vermont has the distinction of being the first state or province in North America to require by statute that all cases of venereal disease be reported by name direct to the state board of health, a law requiring this going into effect in 1915. A similar law was enacted in New Jersey during 1917.

Many serious objections have been raised to all proposed schemes for reporting venereal diseases by name of patient. Many of these are obvious to the medical mind at a glance. The social and moral stigma associated in the public mind with venereal infection is at the bottom of all such objections and constitutes the reason why all attempts to solve the problem of vene-

real disease reporting make a sharp distinction between these and the other communicable diseases.

The arguments against venereal disease reporting may be summarized in the language of a member of the English Royal Commission on Venereal Diseases. He says in substance:

The fundamental objects of notification of cases of communicable diseases are: (a) discovery of foci; (b) isolation of patient to prevent him from becoming a focus; (c) disinfection measures, principally directed against surroundings.

Notification, he argues, will not serve for the first object; that if it did, isolation is not needed for venereal diseases; and that as far as disinfection goes, it is the patient and not his surroundings which need disinfection, or in other words, treatment to render him non-infective.

The Commission also rejected modified or anonymous reporting schemes as furnishing only misleading statistical information.

Nevertheless, the British Royal Commission conclude that with this extension of popular knowledge regarding venereal diseases "it is possible that notification in some form will be demanded." Incidentally it may be said that such a popular demand is rapidly coming to the fore in England, largely as a result of war conditions.

The objections summarized by the Royal Commission are weighty, their argument which underlies all objections being that if the public knew that cases would be reported by registered ethical physicians, patients would tend to seek irregular or quack treatment, or ignorantly attempt self-medication, with far worse results than at present come even from these two evils. It has also been argued that reporting would provide many opportunities for blackmail, etc.

Certain it is that, from their nature, any public health measure relating to venereal diseases which preserves the confidential character of the physician's relation to his patient is to be desired. On the other hand, society as a whole is entitled to statistical knowledge of the prevalence of these diseases, and also an assurance that all cases are being adequately treated, and hence rendered non-infective. If adequate treatment cannot be guaranteed, the authorities should have knowledge of that class of the venereally infected and interfere, forcibly if need be, to see that they cease to be foci of infection.

In 1915 the state of West Australia passed a statute which makes the contracting of a venereal disease a felony if the infected person fails forthwith to place himself under adequate medical care; which requires physicians to report by number all new cases; which requires physicians to notify each other when a patient changes medical advisers; and finally, which requires physicians to report name and address of patient only in case the patient ceases to report for treatment and no notice of change of med-

ical advisers is received from another physician within a definite period of time.

This scheme of conditional notification has been adopted by many communities all over the world, in modified forms. It is the universal rule, also, that reports are made directly to the state health authorities.

After long study, the above-outlined scheme appeared to the State Department of Health of Massachusetts to be the one method promising best results, and the following Regulations governing the method of reporting gonorrhea and syphilis, based upon the "West Australian" idea, were adopted at the same meeting of the Public Health Council of the State Department of Health at which these diseases were declared dangerous to the public health.

#### REGULATIONS GOVERNING THE REPORTING OF GONORRHEA AND SYPHILIS.

1. Gonorrhea and syphilis are declared diseases dangerous to the public health, and shall be reported in the manner provided by these regulations promulgated under the authority of Chapter 670, Laws of 1913.

2. Gonorrhea and syphilis are to be reported (in the manner provided by these regulations) on and after February 1, 1918.

3. At the time of the first visit or consultation the physician shall furnish to each person examined or treated by him a numbered circular of information and advice concerning the disease in question, furnished by the State Department of Health for that purpose.

4. The physician shall at the same time fill out the numbered report blank attached to the circular of advice, and forthwith mail the same to the State Department of Health. On this blank he shall report the following facts:

Name of the disease.

Age.

Sex.

Color.

Marital condition and occupation of the patient.

Previous duration of disease and degree of infectiousness.

The report shall not contain name or address of patient.

5. Whenever a person suffering from gonorrhea or syphilis in an infective stage applies to a physician for advice or treatment, the physician shall ascertain from the person in question whether or not such person has previously consulted with or been treated by another physician within the Commonwealth and has received a numbered circular of advice. If not, the physician shall give and explain to the patient a numbered circular of advice and shall report the case to the State Department of Health, as provided in the previous regulation.

If the patient has consulted with or been treated by another physician within the Commonwealth and has received the numbered circular of advice, the physician last consulted

shall not report the case to the State Department of Health, but shall ask the patient to give him the name and address of the physician last previously treating said patient.

6. In case the person seeking treatment for gonorrhea or syphilis gives the name and address of the physician last previously consulted, the physician then being consulted shall notify immediately by mail the physician last previously consulted, of the patient's change of medical adviser.\*

7. Whenever any person suffering from gonorrhea or syphilis in an infective stage shall fail to return to the physician treating such person for a period of six weeks later than the time last appointed by the physician for such consultation or treatment, and the physician also fails to receive a notification of change of medical advisers as provided in the previous section, the physician shall then notify the State Department of Health, giving name, address of patient, name of the disease and serial number, date of report and name of physician originally reporting the case by said serial number, if known.

8. Upon receipt of a report giving name and address of a person suffering from gonorrhea or syphilis in an infective stage, as provided in the previous section, the State Department of Health will report name and address of the person as a person suffering from a disease dangerous to the public health, and presumably not under proper medical advice and care sufficient to protect others from infection, to the board of health of the city or town of patient's residence or last known address. The State Department of Health shall not divulge the name of the physician making said report.

### MORTALITY STATISTICS FOR 1917, FROM THE HEALTH DEPARTMENT, BOSTON.

THE records of the Boston Health Department for the year 1917, just closed, show that 12,721 deaths occurred, against 12,769 for the year 1916. The number of non-resident deaths, which are increasing annually, were 1859, against 1797 for 1916, and comprise 15% of the total number of deaths recorded. The death rate for the year 1917 is 16.47, as against 16.79 in 1916, and is one of the lowest rates ever recorded in this city. Deducting the non-resident deaths, the corrected rate is 14.06, against 14.43 in 1916.

The deaths of children under one year numbered 1965, against 2055 in 1916, giving the low rate of 99.1 per 1000 births. The rate in 1916 was 104.6, and back in 1872, when these statistics were first compiled, the rate was 230. This is the first year in the history of the city of Boston when the number of deaths of infants

\* NOTE: In asking physicians to carry out the provisions of this section, the State Department of Health appreciates that it is asking more than is authorized by the authority of Chapter 870, Laws of 1913. This courtesy is requested, however, in the interest of the public health and to protect the individual who has conformed with the regulations laid down for him.

under one year of age is under 100 per 1000 births. Moreover, of this number there were 385 non-resident babies, comprising 20% of the total, brought to Boston for treatment. Deducting this number of non-resident deaths of infants, the corrected rate is 79.7 per 1000 births.

Although Boston in 1916 led the large American cities as regards the low rate for typhoid fever, this year, 1917, a further decrease is noted, there being 22 deaths from this disease, as against 26 in 1916, giving a death rate of 28 per 10,000 of population, against .34 in 1916. Of this number 5 were non-residents, and deducting these would lower the rate to .22 per 10,000 population.

The following figures are the death rates of the other communicable diseases as compared with 1916 (per 10,000 pop.).

	1917	1916
Whooping cough .....	.57	.97
Typhoid fever .....	.28	.34
Diphtheria .....	3.57	2.43
Scarlet fever .....	.60	.51
Pulmonary tuberculosis .....	14.95	14.62
All forms tuberculosis .....	17.08	17.33
Measles .....	1.31	1.41

The following table will give the number of deaths from the principal causes for the year 1917, as compared with 1916, and also the number of non-residents in these causes for the year 1917:

SOME OF THE PRINCIPAL CAUSES OF DEATH IN 1916 AND 1917, WITH NON-RESIDENTS.

	1916	1917	Non-Res- DENTS
Anterior poliomyelitis .....	168	4	3
Cerebrospinal meningitis .....	45	54	13
Diphtheria .....	185	276	72
Measles .....	107	101	13
Scarlet fever .....	39	46	14
Tuberculosis (pul. and laryng.) .....	1112	1155	105
Other tubercular .....	206	164	50
Typhoid fever .....	26	22	5
Whooping cough .....	75	44	3
Alcoholism .....	162	163	26
Diabetes .....	192	148	21
Appendicitis .....	107	128	28
Bronchitis .....	119	108	5
Cancer .....	868	916	176
Bronchopneumonia .....	619	505	34
Pneumonia .....	1012	1096	91
Influenza .....	80	51	..
Syphilis .....	72	87	14
Diarrhea and enteritis (under 2 yrs.) .....	356	406	91
Diarrhea and enteritis (2 years and over) .....	63	98	17
Old age .....	18	35	..
Premature birth .....	399	371	63
Puerperal diseases .....	180	173	39
Arteriosclerosis .....	283	401	33
Cerebral hemorrhage and softening .....	567	710	56
Bright's disease .....	888	787	76
Heart disease .....	1688	1608	122
Suicides .....	124	134	29
Homicides .....	30	27	6
Illuminating gas poisoning .....	54	59	3

Accidental drowning .....	58	55	19
Traumatism by fall .....	200	222	45
Elevator accidents .....	11	24	5
Electric railway accidents .....	72	26	7
Motor vehicle .....	73	82	15
Steam railroads .....	64	40	16
Teams .....	30	19	3

The figures for the year 1917 show not only a lower death rate, but an actual decrease in the total number of deaths over the previous year. This is a most interesting and encouraging sign.

The typhoid fever figures are gratifying in so far that in 1916, Boston led in this respect all the large cities in America, and it is hoped that with this further decrease it will hold its place in the forefront of progress in matters of health,—inasmuch as typhoid fever rate is the best index of the sanitary condition of a city and the endeavors of its health officials.

Pulmonary tuberculosis shows a slight increase but, on the other hand, all forms of tuberculosis show a decrease. Much time and endeavor has been spent in tuberculosis work. Constant supervision is kept over each case in Boston, and to our knowledge, there is not a neglected case of tuberculosis in Boston that is in need of hospital treatment. Regular and constant visits are made to each case by nurses and physicians of the city departments, and conditions noted, both as regards their physical condition and the conditions at home under which they live.

Diphtheria shows an increase, and it might be said that during the past year this disease has been unusually prevalent, not only throughout the State, but all over the country. The department has during the year urged physicians to use antitoxin immediately upon diagnosis, and to be on the watch for "carriers," so dangerous in a community in the spread of a disease. Antitoxin is provided free of charge, and hospital facilities are provided for all patients who cannot be properly treated at home.

Whooping cough shows a decrease over 1916, and with the opening of the new ward of the city of Boston, the first of its kind in the country, additional improvement is looked for in 1918.

Scarlet fever shows a slightly higher rate, and measles lower than in 1916.

During the year 1917, there were but four deaths from infantile paralysis, and three of these were non-residents, against 168 in 1916.

Pneumonia continues to exact its toll in increasing numbers. Broncho-pneumonia and lobar pneumonia, combined, show an increase of thirty deaths over 1916, the figures being 1601 and 1631. Pneumonia is unusually prevalent all over the country, and even in the military camps of the government. Modern methods of serum treatment for this disease, which are about to be introduced, will be of great assist-

ance to health officers all over the country in combating pneumonia.

The decrease in the number of infants under one year of age and the corresponding low death rate is especially gratifying, and is due to the coöperation and excellent work of the many charitable and philanthropic associations, organizations, clubs, etc., that are coöperating with the Health Department in this great campaign for baby-saving that has been carried on for several years past. Results are now beginning to show, and the interest that has been awakened among the mothers and the physicians by all agencies that have so earnestly and generously worked towards this great and common end has been productive of results. Education, advice, literature, instruction, teaching and the public press have all played a great part in this work, and all who have worked for baby-saving are to be congratulated for the wonderful showing of 1917,—a goal that has long been our aim.

This work has not been without its handicaps, such as the extreme periods of heat last summer, the high and increasing cost of foodstuffs, particularly milk, the babies' food, clothing and fuel, and the cold of early winter. These obstacles that have been placed in the path of baby progress have happily been overcome. It is not sufficient that this work should stop here, but the good results should act as a stimulus to strive for even better figures for the coming year. This work will be difficult in view of the industrial and economic conditions all over the country, but every effort is worth making when we know the reward is the saving of an infant's life.

## NOTES ON BIOLOGIC PRODUCTS FROM THE STATE DEPARTMENT OF HEALTH.

### DIPHTHERIA ANTITOXIN.

All the good parchment paper used in dialyzing serum was formerly obtained from Belgium. When this supply was cut short on account of the war, it became necessary to issue unconcentrated normal serum. In consequence of the larger amount of foreign protein injected into the body with the normal antitoxic serum, the number and severity of urticarial rashes which accompany serum sickness became manifest. Recently it has been possible to obtain parchment paper, and all the serum is now dialyzed and concentrated, and there should, therefore, be an improvement in the matter of serum sickness following the injection of antitoxins.

Formerly, prophylactic doses of diphtheria antitoxin were issued in 750 unit packages and 1500 unit packages. Hereafter, these two packages will be discontinued, and a prophylactic dose containing 1000 units will take their place. This is usually a sufficient immunizing dose for a child. There are now available, therefore,

packages of 1000, 3000, 6000 and 12,000 units, the latter for hospital use only.

Request is again made that all empty bottles, vials, boxes, cartons, unused vaccine tubes and containers be returned to the laboratory. The increased cost of these supplies makes it imperative to practise the strictest economies.

#### TYPHOID AND PARATYPHOID PROPHYLACTIC.

Attention is invited to the fact that the laboratory now makes and distributes the triple vaccine, containing *Bacillus typhosus*, *Bacillus paratyphosus A.* and *Bacillus paratyphosus B.* The reaction following this triple vaccine is not appreciably different from that of the vaccine containing typhoid bacilli alone. It protects against both typhoid fever and paratyphoid fever, and is therefore recommended. Those who have been vaccinated against typhoid fever may subsequently be vaccinated with paratyphoid vaccines, and vice versa. These vaccines may be had singly or in combination, but it saves time and trouble to give the three in one.

#### DIPHTHERIA PROPHYLACTIC.

The Division of Biologic Laboratories is now also prepared to issue under certain restrictions the antitoxin-toxin mixture for active immunization against diphtheria. This is a useful method for protecting adults as well as children. It should be used only in conjunction with the Schick test. Application for Schick material and antitoxin-toxin mixture should be made to the State District Health Officers.

### TUBERCULOSIS AND THE WAR.

In an interesting memorandum entitled "The Influence of War Conditions upon the Death Rate from Consumption," Kerr, the able health officer of Newcastle-upon-Tyne, England, gives a summary of the tuberculosis statistics of his city for the past five years, and shows that the number of deaths from pulmonary tuberculosis has increased, both numerically and relatively, since the outbreak of the war. The following table is reproduced:

TOTAL DEATHS FROM PULMONARY TUBERCULOSIS.

YEAR	ESTIMATED POPULATION	DEATHS
1913	271,295	326
1914	271,523	375
1915	278,107	380
1916	272,259	407
1917*	?	246

\* January to June.

According to Kerr, "all the European nations participating, however slightly, in the war have suffered a definite and, in the case of the chief belligerents and those whose territory has suffered most, an alarming increase in the deaths from pulmonary tuberculosis among their civil populations. Great Britain has suf-

fered the least so far in every way, including this, but even so, her tuberculosis toll has risen perceptibly, and this is readily seen in the industrial areas such as our own city."

Among the chief conditions which are specially likely to render persons most susceptible to contract and succumb to tuberculosis of the lung, Kerr gives first place to poverty, either actual or relative, to a rising cost or scarcity of food and other necessities of life. Next in importance he places bad or insufficient housing, with resultant overcrowding and lack of fresh air. Concerning overstrain, either physical or mental, placed third in order of importance, he says: "Practically the whole civil population is suffering from overwork or anxiety of mind. The former has undergone recent amelioration in the munitions factories since the Government has begun to realize the fact that overwork and overstrain of employees is unprofitable, and that a six-day week yields better work returns than a seven-day one."

The influence of employment, Kerr shows, is well reflected in the "considerable increase in the number of deaths among that section of the civil population which has been specially affected by the new conditions of life brought about by the war, viz.: girls at ages between 15 and 20 years, who have so nobly filled the gaps in factory, shop, office, and even in the heavier out-door employments, caused by the absorption of the able-bodied man into the army. So great a change, at the most susceptible period of life, cannot but have left its mark, and this is seen in the great rise in deaths from consumption among the young women."

This study emphasizes anew the intimate relation existing between economic conditions and pulmonary tuberculosis. They lend weight to the contention that the initial infection in tuberculosis is in infancy, and that the development of manifest disease in later life is due to other factors, largely economic, which operate by breaking down the resistance of the infected individual. A consideration of the facts here presented is commended to the attention of those superficial students of medicine who consider that the etiology of tuberculosis begins and ends with the tubercle bacillus.

#### SOCIETY NOTICE.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.—The regular Midwinter Meeting of the Society will be held at the Boston Medical Library on Wednesday, January 16, 1918, at 12 o'clock noon.

Business: Report of committee on question of financial assistance of those who enlist.

Paper: Dr. Frederick T. Lord will speak of his experiences as a member of the American Red Cross Committee to Serbia.

Lunch will be served at 1.15 p.m.

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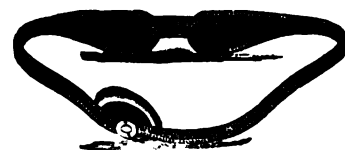
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## CONTENTS

### ADDRESS

RESEARCH PROBLEMS IN TUBERCULOSIS. *By Edward R. Baldwin, M.D., Saranac Lake, N.Y.*

### ORIGINAL ARTICLES

THE CARREL-DAKIN METHOD OF TREATING SEPTIC WOUNDS; ITS APPLICATION TO CIVIL SURGERY. *By G. A. Moore, M.D., Brockton, Mass.*

SURGERY OF THE BILIARY TRACT. *By J. Emmons Briggs, M.D., Boston.*

LIPIDS IN 131 DIABETIC BLOODS. *By Horace Gray, Boston.*

### CLINICAL DEPARTMENT

PARALYSIS AGITANS AND MYOPATHIC DYSTROPHY OCCURRING IN UNCLE AND NEPHEW, WITH EVIDENCES OF INTERNAL GLANDULAR DYSCRASIA IN THE LATTER.

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### MEDICINE.

#### OBSERVATIONS ON CIRCULATORY INEFFICIENCY, WITH SPECIAL REFERENCE TO THE NERVOUS FACTOR.

GUNSON (*The Lancet*, Nov. 3, 1917) discusses what he calls inefficiency in diphtheria and other acute infections. He describes two cases of this condition of vascular type and cardiac type. In both, disturbed nervous control is held to be the essential factor.

**Vascular type.** The cardiac rhythm remains normal, and there occurs a primary failure of the peripheral circulation with subsequent embarrassment of cardiac action. The outstanding symptoms are vasomotor and depend upon the disturbed function of the nervous control of the peripheral circulation. The intrinsic nerve elements of the blood-vessels, the extrinsic nerves and their connections may all be involved; disturbance of suprarenal gland activity probably plays an important part.

This condition is described in the acute stages of diphtheria and dysentery; it has been noted also in severe cases of scarlet fever, pneumonia, and enteric fever. When it persists a group of symptoms—exhaustion on slight exertion, dyspnea, pain, giddiness, and palpitation—is established which may become permanent; to obviate this, early treatment, complete removal of the infective focus, and adequate rest are essential in all patients suffering from acute infections.

**Cardiac type.** This type, observed in diphtheria, is always preceded by the onset of a severe arrhythmia, due, as a rule, to frequent premature contractions with occasional paroxysms of regular tachycardia. A comparison is made between the state of the circulation in this condition and that which results from the onset of auricular fibrillation, the common cause of cardiac failure in patients not suffering from acute illness. It is suggested that any consideration of the factors controlling arrhythmia should embrace, in addition to the intrinsic nervous connections, including the central nervous system, the sympathetic system, and the pathological processes which specially influence their structures. [J. B. H.]

### MILITARY MEDICINE.

#### REMARKS ON THE TREATMENT OF NEURASTHENIA AND PSYCHASTHENIA FOLLOWING SHELL SHOCK.

WILLIAMSON (*British Medical Journal*, Dec. 1, 1917) discusses numerous cases of neurasthenia and psychasthenia following shell shock, and summarizes his views as follows:

"1. All anxiety and fear of further exposure to similar risks to life, and anxiety from other causes should be removed if possible, and the patient should be definitely told that he will certainly recover.

"2. The sleep treatment is very useful. At first hypnotic drugs may be given both at night and during the day for a short time, so that the patient may sleep all night and for a few days also during part of the daytime.

(Continued on page vi.)





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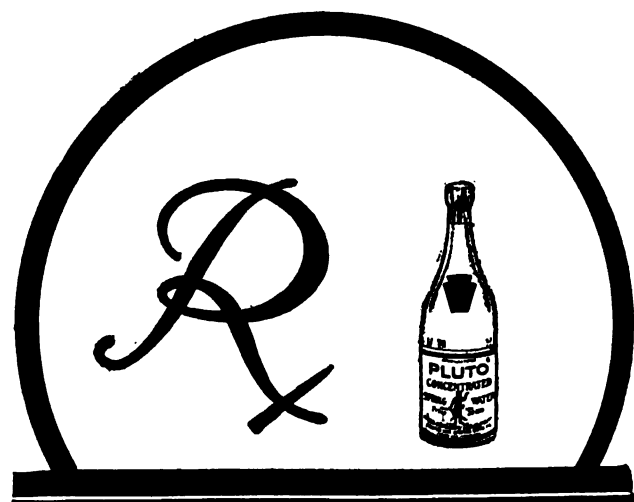
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(Continued from page iv.)

"3. He should cease thinking of the war and his experiences. This may be brought about (a) at first by the sleep during part of the daytime as well as during the night, as just described, and by occupation whenever he is awake; (b) afterwards he should be kept asleep all night (by drugs), but during the day the drugs should be discontinued and he should be kept fully occupied in a suitable way.

"4. As regards the kind of occupation:

a. A new subject, or one not associated with his war experience is desirable.

b. Very close application to the work in hand is important.

c. The occupation should be one requiring thought and if the patient finds, after continuing it for some time, that it can be done mechanically, the occupation should be changed or altered so that thought is required.

d. It should be one very interesting to the patient and one which will become more interesting.

"Many other methods of treatment have been tried and recommended, but I have not attempted any review of the literature of the subject, and have only considered the treatment which, from my own observations, has appeared suitable. In many of the severe cases recovery is very slow, but I think the line of treatment suggested will be found of much service."

[J. B. H.]

### FURTHER OBSERVATIONS ON THE RESULTS OF BLOOD TRANSFUSION IN WAR SURGERY.

ROBERTSON AND WATSON (*British Medical Journal*, Nov. 24, 1917) present further observations on blood transfusion with the details of 36 cases and come to the following conclusions:

1. Many cases admitted in an inoperable condition from severe hemorrhage have been rendered operable by blood transfusion.

2. The largest factor in the causation of the condition of shock as seen in patients admitted to a casualty clearing station appears to be the loss of blood, except in cases of visceral injury.

3. In two cases hemolysis hastened the death of the patient. In one of these the citrate method was used. The possibility of hemolysis certainly is present, but the danger of its occurrence is slight in comparison with the danger of operating on a shocked and exsanguinated patient.

4. The results in this series of cases of severe primary hemorrhage may be classified as:

Life saving .....	22
Immediately beneficial, but died from infection or operation .....	9
No benefit .....	3
Harmful .....	2

Total .....

5. Although the mortality in this series of cases is comparatively high, it must be remembered that all the patients were in a desperate condition and, with perhaps one possible exception, could not have been expected to survive if the procedure had been withheld.

[J. B. H.]

### A REPORT ON THE PATHOLOGY, DIAGNOSIS, AND TREATMENT OF ABSOLUTE HYSTERICAL DEAFNESS IN SOLDIERS.

HURST AND PETERS (*The Lancet*, Oct. 6, 1917), discussing etiology, diagnosis, treatment, and pathogenesis of absolute hysterical deafness in soldiers, report two cases. They are convinced from their experience in these cases that absolute deafness associated with normal vestibular reactions should be regarded as

(Continued on page viii.)

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(Continued from page vi.)

hysterical and, when simple encouragement fails, as will generally be the case if the patient is not also dumb, an "operation" should be performed by which the patient is given a small amount of ether and a slight incision made back of the ear by means of which simple procedure hearing is often restored. The patient should be firmly convinced beforehand that this "operation" is going to restore his hearing.  
[J. B. H.]

### SURGERY.

#### THE TREATMENT OF STAPHYLOCOCCUS SEPTICEMIA BY TRANSFUSION OF IMMUNE BLOOD.

HOOKE (Ann. of Surg., November, 1917) bases his report on five cases treated by immune donors. Three cases recovered, and two died suddenly after immediate striking improvement, from cerebral embolism, on the eighth and eighteenth days after the last transfusion. The donors in four cases were immunized by being subjected to varying degrees of vaccination from the patient's infecting organism. This limited experience was favorable enough, however, to impress the author with the value of this procedure in cases not responding to other forms of treatment. In cases with chronic bone infection there is generally time in which to prepare a donor's blood, but with rapid or prolonged anemia, a preliminary transfusion with normal blood should be done first. The work and report are suggestive.  
[E. H. R.]

#### THE RESULTS OF TREATMENT OF BLADDER TUMORS.

GERAGHTY (Jour. A. M. A., Oct. 20, 1917) reviewing the progress of our treatment of these conditions emphasizes the fact that it is essential to determine accurately the type of tumor in a given case in order to select the treatment best suited to the particular type in question. The early recognition of papillary carcinoma is most important and when the diagnosis is made the tumor should be radically resected, if operable. It has been the experience that radium or fulguration is valueless in this type of case. Recurrences, however, after radical operation, may be cured if treated early either by fulguration or radium or a combination of the two. In the more resistant malignant papillomas radium and fulguration have affected many cures and much symptomatic relief. In this type the more conservative methods give far better results than the radical procedures.  
[E. H. R.]

#### BLADDER DISTURBANCES DUE TO NERVE LESIONS.

SMITH (Jour. A. M. A., Oct. 20, 1917) in a brief paper, well illustrated with case histories, calls attention to the fact that the first signs of such nerve diseases as tabes dorsalis, syringomyelia, multiple sclerosis may first be observed by the urologist to whom the patient comes for relief of various forms of bladder disturbances. The above diseases should always be suspected in bladder disturbances which cannot be explained on simpler grounds or which do not respond to treatment of an appropriate kind.  
[E. H. R.]

#### ACUTE SUPPURATIVE CELLULITIS OF THE STOMACH.

RIXFORD (Ann. of Surg., September, 1917) in an interesting article on this condition which is often spoken of as phlegmonous gastritis, finds only 150

(Continued on page x.)

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Literature sent upon request

(Continued from page viii.)

cases reported in the literature. He believes, however, that the condition is much more common than reported. Streptococci have been consistently demonstrated in pathological specimens. Clinically the onset is sudden, with epigastric pain, chill, burning sensation in the stomach, vomiting and fever, leucocytosis and acute tenderness in the epigastrium. Diagnosis is difficult,—acute hemorrhagic pancreatitis often being diagnosed, or even perforation of gastric or duodenal ulcer. Phlegmon secondary to extensive carcinoma or chronic ulcer of the stomach is less fulminating in its onset than the so-called primary cases when no soldering of the loose areolar tissue has taken place. Cases with localized abscesses are the most favorable for surgical treatment; cases with minute multiple abscesses, less favorable; and cases with diffuse cellulitis are the least favorable. In the first group the indications for incision and drainage are clear. In the second group partial or total gastrectomy may be done. [E. H. R.]

## MILITARY SURGERY.

### AN ADDRESS ON INJURIES TO THE PERIPHERAL NERVES AND THEIR TREATMENT.

MOYNIHAN (*British Medical Journal*, Nov. 3, 1917), in an interesting and practical article on injuries to the peripheral nerves, summarizes his results as follows:

1. The earliest examination should be made of all wounds in which division of a nerve trunk is probable. If at the casualty clearing station such a lesion is found, end-to-end suture should be adopted forthwith. This is more likely to be possible in cases where primary suture of the wound, after excision, is found practicable.

2. If secondary sutures of the wounds, after the Carrel-Dakin method has been practised, is to be undertaken, the union of divided nerves should be secured at the same time.

3. If these methods have been attempted and have failed they do not prejudice the later union of the nerve. On the contrary, they probably ensure that an easier and more satisfactory operation can then be practised.

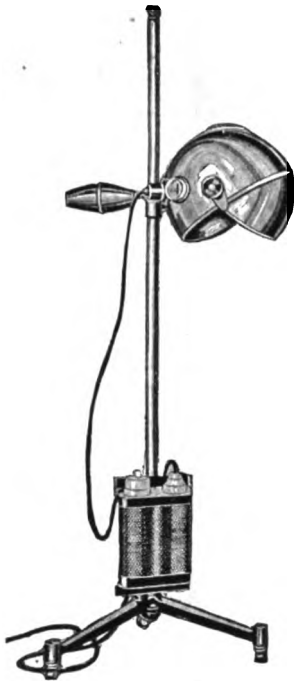
4. Throughout the whole period before late nerve suture is attempted the strictest attention must be paid to the relaxation and nutrition of all paralyzed muscles, to the maintenance of suppleness in all joints moved by these muscles, and to the preservation of the integrity of the skin.

5. Operations upon nerve trunks demand the most scrupulous observance of the ritual asepsis. There must be the greatest gentleness of manipulation; the nerve must not be injured by instruments or by the surgeon's finger; it must not be separated from its sheath or disturbed overmuch from its bed; it must not be chilled or allowed to dry. All sutures must be of fine catgut, and introduced with most punctilious accuracy. Axial rotation of the nerve must be avoided. The cut ends of the nerve before approximation must show clearly the fibres of which the trunk consists.

6. Nerve-grafting is of little or no value; nerve anastomosis is to be sharply condemned: the turning down of flaps from the nerve to bridge a wide gap is useless.

7. Tendon transplantation is of great value in cases where nerve suture is impossible, or has given a result not entirely satisfactory. [J. B. H.]





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## TABLE OF CONTENTS

January 24, 1918

ADDRESS	EDITORIALS
RESEARCH PROBLEMS IN TUBERCULOSIS. <i>By Edward R. Baldwin, M.D., Saranac Lake, N. Y.</i> . . . . .	THE GOVERNMENT WAR-RISK INSURANCE . . . . . 126
	PRENATAL CARE AND INFANT MORTALITY . . . . . 126
	HEALTH LEGISLATION RECOMMENDED BY STATE DEPARTMENT OF HEALTH . . . . . 127
	MASSACHUSETTS MEDICAL SOCIETY DUES . . . . . 127
	MEDICAL NOTES . . . . . 127
ORIGINAL ARTICLES	OBITUARY
THE CARMEL-DAKIN METHOD OF TREATING SEPTIC WOUNDS; ITS APPLICATION TO CIVIL SURGERY. <i>By G. A. Moore, M.D., Brockton, Mass.</i> . . . . .	THEODORE CALDWELL JANEWAY, M.D. . . . . 130
SURGERY OF THE BILIARY TRACT. <i>By J. Emmons Briggs, M.D., F.A.C.S., Boston</i> . . . . .	
LIPIDS IN 181 DIABETIC BLOODS (continued). <i>By Horace Gray, Boston</i> . . . . .	CORRESPONDENCE
	NAVY'S CALL FOR BINOCULARS, SPY-GLASSES AND TELESCOPES—"THE EYES OF THE NAVY." <i>Franklin D. Roosevelt</i> . . . . . 140
	DOCTORS AND THE MEDICAL RESERVE CORPS. <i>Clarence E. Livingston</i> . . . . . 140
CLINICAL DEPARTMENT	MISCELLANY
PARALYSIS AGITANS AND MYOPATHIC DYSTROPHY OCCURRING IN UNCLE AND NEPHEW, WITH EVIDENCES OF INTERNAL GLANDULAR DYSCRASIA IN THE LATTER. <i>By Michael Osmat, M.D., New York</i> . . . . .	GOITER IN ALBERTA . . . . . 130
	THE MANDRAKE IN FOLK-MEDICINE . . . . . 131
	WAR COMMITTEE FOR THE UTILIZATION OF HOSPITAL FACILITIES . . . . . 132
	ANTHRAX IN MASSACHUSETTS . . . . . 132
	SHELL SHOCK AMONG TROOPS . . . . . 133
	INCREASE IN TUBERCULOSIS . . . . . 134
	PRINCIPAL CAUSES OF DEATH . . . . . 134
	THE FIRST SEMIANNUAL REPORT OF THE WAR COUNCIL OF THE AMERICAN RED CROSS . . . . . 136
	NOTICES, RECENT DEATHS, ETC. . . . . 140
BOOK REVIEWS	
Physical Exercise for Invalids and Convalescents. <i>By Edward H. Ochsner, M.D.</i> . . . . .	
A Study in Hospital Efficiency as Demonstrated by the Case Report of the First Five Years of a Private Hospital. <i>By E. A. Codman, M.D.</i> . . . . .	

### Address.

#### RESEARCH PROBLEMS IN TUBERCULOSIS.\*

BY EDWARD R. BALDWIN, M.D., SARANAC LAKE, N. Y.,  
*Director of Trudeau Foundation.*

It may be wondered why there are many questions about tuberculosis, related to its causes, that remain to be answered. Everyone readily understands that a specific preventive or curative treatment awaits discovery, yet fails to realize that many pathways need exploration, which may lead us more surely to the goal of prevention, if not a cure.

This is one reason why the close study of a community, under the admirable system inaugurated here, has a special value for the student of tuberculosis problems. What are these problems?

I shall try to indicate a few of the most important ones without indulging in over-technical terms,—often feared not only by a lay audience but also by doctors whose work is in the arduous daily and nightly visitation of the sick.

I think that there are three main classes of problems that may be taken as applying to all diseases to a greater or less degree.

\* Read at a meeting of the Framingham Medical Club held under the auspices of the Framingham Community and Tuberculosis Experiment Committee of the National Association for the Study and Prevention of Tuberculosis, Framingham, Massachusetts, November 1, 1917.

*First*, there are the fundamental causes of disease, their origin and the reasons for their existence.

*Second*, the natural and acquired resistance to disease.

*Third*, the best methods of prevention and treatment.

In reference to tuberculosis, we already know the nature and actual infective agent in its causation, but we need more light on the origin of the germ. We should like to know why some tubercle bacilli are more virulent than others, and how to distinguish them. We now recognize three main varieties,—those of the human, bovine, and the fowl. There are evidences of intermediate varieties, and yet the main divisions do not change into one another.

Painstaking study has been made and is still in progress to recognize the nature of virulence, i.e., the disease-producing powers of tubercle bacilli. With this knowledge in our possession one can comprehend the advantage of estimating the seriousness or mildness of any individual case of disease.

While tuberculosis does not develop without the bacillus, the body has also to be adapted in some way to form a culture-ground for the germs. It is thus evident that the old inheritance idea may not be wholly cast out. A more fundamental study of heredity is, therefore, important. This will involve especially a comparison between families who have had the disease with those who escape.

In addition to inheritance, there are broad problems of race, soil, climate, geographic posi-

tion, diet and habits, as well as chemical and, possibly, physiological functions, that are closely connected with the development of the disease. Much importance was attributed to predisposition to tuberculosis in past years. It is now known that infection is possible to all, and a predisposition is not necessary for it to take place. The result of the infection, however, is probably greatly dependent on still unknown factors of chemical or vital nature.

Infection, therefore, may result in disease or in an insignificant healed nodule never to become the source of further trouble. Why this happens to be serious in the first instance and harmless in the second is more or less a matter of speculation at present. By careful studies of the lives and habits of groups of individuals known to have the infection, but not diseased in the sense of recognizable illness, we hope to elicit some laws which can govern our policies in the prevention of tuberculosis. Here again the conclusions of the community studies may lead to fuller knowledge. On a still larger scale, the records being made by the new armies, by means of more careful examinations than hitherto had been possible, promise to be helpful.

To return to the subject of the varieties of the tubercle bacilli which afflict mankind: It is now a pretty well-established fact that a small percentage (from 6% to 12%), of tuberculous children become infected with bovine bacilli. It varies with different countries and localities. The chief question is: What becomes of the children who recover from the bovine infection? Do they form many of the victims of pulmonary tuberculosis who later acquire the human type of bacilli? It has been exceedingly difficult to find the bovine bacilli in persons who have pulmonary tuberculosis, yet there is no proof that the bovine change into human bacilli while in the human body. The fowl tubercle bacillus is seldom, if ever, the source of danger to mankind, but this also is not satisfactorily settled.

More information is also needed about the age when infection takes place which leads to disease. This is also bound up with questions of race and exposure to infection, the way in which the bacilli find access to the body, and their amount. Some knowledge of these points is obtainable by experimentation and some by observations of years on individuals who have never encountered the bacillus in childhood.

The frequency of adult infection is an important question, as it appears to be relatively infrequent. In most instances of pulmonary tuberculosis it is possible to say that the infection might have occurred in early childhood and youth. On the other hand, such early infections very frequently never spread, leaving one to suspect a second infection as the cause of the ultimate disease.

Whether the bacilli are transmitted directly

or not from the mother to the unborn child is a problem that has been fought over for many years. It is known to be possible, but in only a few cases has it been demonstrated. Some color is still left in the idea of such direct inheritance, but it lacks experimental proof and is not seriously held responsible for many cases of tuberculosis.

There are certain periods of life when the disease develops with greater frequency, especially at puberty and in females at childbirth and the menopause. The explanation of these facts is largely guess-work at present, and more intimate knowledge of the physiological and chemical changes taking place may enlighten us. Medical science has expanded its field very much, and in recent years new principles have been discovered that throw into relief new points of view, where obscure ideas prevailed in the past. It is especially in reference to these life-periods when profound changes do take place that modern physiology points to the influence of the so-called internal secretions. Whether from an excess or a lack of some substance tuberculosis is favored, is a distinct problem now being studied.

In addition to these questions as to the age at which infection takes place and the number of times it may happen, there is the determination of the pathways by which it gets in. In this problem we have one of the greatest importance in devising means of prevention. Very much experimental study has been given it, and yet there remain further points to be cleared. In general, one may say the fact is sufficiently well established that inhalation of either dry bacilli in dust or moist bacilli in the form of spray causes most of the infections. The track which they follow after getting into the body through the lungs or intestine is still being studied, and there are probably unusual pathways into the body, such as the skin, the gums, and the inside of the mouth.

These points are more or less important, especially in relation to young children.

The relation of infection to occupations and racial customs and habits is another phase of the same subject. Some trades, such as that of the coal miner, have very little tuberculosis; others no more dusty have a very much larger percentage, possibly because of some peculiarity of the dust. Comparatively little is as yet known of the cause of the high death rate in some dusty trades, and experiments are needed to aid the solution of such questions. Mortality figures give evidence of the fact, but the underlying reasons and the best methods of prevention are yet to be worked out.

Industrial centers are notoriously the places where tuberculosis thrives. Preventive measures are needed, based on the accurate knowledge of the influences favoring the disease, whether due to the occupation itself or to the habits of the people. Much has been accomplished in late

years in the improvement of working conditions, based on general considerations of health, but special causes are suspected that operate directly or indirectly to produce tuberculosis. Hence the value of a systematic campaign like the one being made here. I hope the time will soon come when everywhere the same attention may be given to other communities, and universal principles, found to be related to the development of tuberculosis, shall be followed universally by the application of the same preventive measures. There is, possibly, no other problem of equal importance among infectious diseases, and which is really of national scope.

We may next turn to the subject of even greater importance than infection, namely, that of resistance or immunity to disease. It was once thought that some individuals were immune against infection by the tubercle bacilli, and others susceptible. We now know that anyone can be infected, but that many have a natural or acquired resistance to this disease. It appears also true that from childhood to maturity an increasing degree of resistance accompanies growth, except at the critical ages previously mentioned. The consequences of infection are, therefore, less serious in full-grown persons. They are endowed with stronger defenses than children, and these are quite sufficient in checking the spread of the bacilli.

Many theories have been held about the blood, especially the white corpuscles and their power to destroy the bacilli. It is true that in some diseases the bacteria are readily destroyed in the blood fluids when good resistance is established.

In tuberculosis the matter is more complicated because, while bacilli no doubt do die in the blood under the influence of antagonistic ferments, there are always some that survive and must be disposed of more slowly, if at all. The exact method by which we resist tuberculosis in the cells and tissues is still being studied. Theories held at one time are not tenable now, but each year brings us nearer to the understanding of these delicate processes in the cells of the body. A complete knowledge of these things is necessary before we can work out the best means of prevention by fortifying the body against disease.

It follows that if we knew how the healthy body disposes of the tubercle bacilli, we could expect to know what was lacking in those who do not resist. This means a knowledge of susceptibility,—what it means in terms of blood substances, cells, ferments or chemical substances.

When we observe flat or narrow-chested persons, we speak of them as predisposed to tuberculosis. This is a fact without much explanation except in vague terms, such as deficient expansion, poor circulation or displaced organs.

If we can counteract the functional defects, we are working on the best basis that we know

at present. It is entirely conceivable that the real predisposition in such individuals rests on other causes, possibly remediable and not directly the result of flat chests or other deformities. Some of the alleged predispositions to tuberculosis are indeed the results of early infections by the disease itself, which interfere with normal growth, especially of the jaw, spine and thorax. We also know that some degree of immunity to pulmonary tuberculosis may follow tuberculosis in other parts of the body, particularly the lymph glands and bones.

This observation has been the cause of much discussion in late years. The first years of life witness a gradual development of resistance to tuberculosis, which seems in many cases to be due to a species of vaccination. Like one attack of scarlatina or measles, an immunity follows, of greater or less degree, which is sufficient to last through a long life. In the beginning, tuberculosis of slight amount probably acts in the same way. Subsequent infections are less and less likely to occur if the specific influence set in action by the first one is still working to prevent them. One naturally thinks that it would be desirable to have a universal infection for this reason. The difficulty is that there is no certainty that either the dose or the virulence of the bacilli can be known, and that the recipients might be in poor condition to receive the infection safely.

It is, therefore, safer to do away, if possible, with all danger of infection at any time.

Observations have been made to show that peoples that are but recently civilized, or that are still little in contact with civilization as we know it, are extraordinarily susceptible to acute forms of tuberculosis. This is true of the Indians of the Southwest, the Polynesians, and of many nomadic tribes of Asia.

One may actually fear that the "back to nature" cult may have other than social objections unless the world were made safe against the bacillus. We may be well assured that such an involution would take ages to produce. As our city life is now constituted, much undiscovered tuberculosis must prevail. Students of epidemiology give little attention to it because of the futility of attempts to control it by law. Only the really well-marked cases are discovered unless a very thorough examination is instituted, such as has been done in Framingham. The consequence is that tubercle bacilli are so commonly present that few people escape infection, and our efforts must be constant to build up a good resistance, while diminishing the dangers of infection by public and private hygienic measures.

One reason that no harm follows infection in so many people is that they escape other dangers that tend to awaken or spread an innocent tuberculosis. This fact must be carefully noted. Severe influenza, measles, whooping cough, acute bronchitis, and many other acute respira-

tory diseases have much to do with breaking down the normal resistance. Some act mechanically and scatter the bacilli by means of the rapid flow of blood through the lymph glands at a time when the body is weak from combat with another infection. Others doubtless exhaust some important functions of the body cells.

This will also occur in the exposure and fatigue incident to the war.

It has been believed by some that the vaccination against smallpox and typhoid, now generally applied to all the armies, reduces resistance to tuberculosis. While theoretically this may be true, and in isolated cases the coincidence of an outbreak of tuberculosis following vaccination has occurred, there are too many benefited by the protection against these diseases to oppose these measures. The chief objection to it, as now applied, is that it must be done on a large scale, and there is no time to pick those who may be showing symptoms of tuberculosis hitherto unsuspected.

To summarize in review, it may be said that resistance to tuberculosis is not immunity in the absolute sense. The resistance is natural or inherited in part, acquired gradually with growth and aided, to some extent, in many people, by slight infection. It may be broken down by other diseases, by all the hardships of life, by dissipation, by exposure and strain of war, as well as by underfeeding.

We know the main causes of breakdown in resistance, but not the minute changes in the body that make for protection and the reverse.

Finally, I should like to remark on the important subject of prevention of infection and the treatment of those afflicted with tuberculosis.

Sputum prophylaxis is the chief end of all measures taken to destroy the bacilli. This is ascertained beyond question. Were it possible to destroy all sputum as fast as it is expelled, a long step would be taken in prevention of tuberculosis. There is a widespread campaign of education, which has already lowered the death rate perceptibly. If all coughing without covering the mouth could be stopped, another drop in tuberculosis mortality might be expected. If handkerchiefs were abolished and the hands of patients kept clean, another considerable percentage might be cut off the death rate.

In short, if the personal habits of the open tuberculosis patients could be controlled, a very great lessening of tuberculosis should be expected. What would this involve? It would require each individual to expectorate properly and to do it in private, when possible; to use some form of cuspidor, preferably of paper; to cough as gently as possible, with paper or cloth held over the mouth during the act, especially when indoors, where children are present, and to use soap and water frequently on hands and mouth. We know enough about tuberculosis now, in this connection, to prevent it in great

measure. The problem is how to get the patients to do these simple things.

In sputum prophylaxis perfection cannot be expected, but relative perfection has been and can be accomplished.

It may be impossible in a home where the mother is ill, but quite practicable where the father or one of the children is the invalid. The social customs of each race and family will often determine what is actually done, in spite of detailed instructions. Hence the slow evolution of the careful consumptive.

Each family is a problem by itself, and each individual presents some phase different from another. Isolation of the bad cougher is imperative where small children are present, for the spray from the sputum is often abundant, soiling hands, clothing, and contaminating food at the table. The mouth and lips are probably less often coated with bacilli than is generally believed, and healthy adults should not fear infection from those sources.

The practice of using a mouth wash after raising sputum is a useful adjunct, though of less consequence than hand-washing, in my opinion.

The protection of food from flies, and from human and bovine bacilli, is of sufficient importance to the infant of healthy parentage, to justify stringent laws. Hence, no care of milk can be too great, nor should it be handled by many persons.

When infection has once entered the home, it is a question what can be done for the children, to avert the disease. Here may be problems of great interest for the teacher and social worker, to fit these children for occupations which require little mental and physical strain. Tuberculosis can be bred out of a family by feeding abundantly, and vigorous physical training to overcome developmental defects while children are still young. Our forefathers in New England believed firmly in the hereditary transmission of the disease, and many are the instances of youth who overcame the inherited weak chest or poor muscular power under the guidance of the family physician. They were wise in their generation.

It has been declared impossible to prevent tuberculosis unless we can isolate all the people who have it,—like the unfortunate lepers of Hawaii.

If that be so, we shall doubtless continue to have the disease for many centuries to come. What is forgotten in such a statement is the gradual control of other diseases that powerfully aid if they do not actually give the start to tuberculosis; also the lessening of poverty and alcoholism, as well as much improvement in living conditions. All of these factors are actually diminishing the incidence and severity of tuberculosis, so that hygiene and sanitation may supplement these and reduce the disease



in the face of a certain number of opportunities for infection.

It has been the dream of medical scientists that we should some day possess a specific preventive inoculation which would confer a lasting protection. Many experiments have shown that certain weak, virulent tubercle bacilli, when inoculated, soon die out or become healed and for the time being—possibly for a year or more—confer a heightened resistance against more dangerous infection.

This method of protective inoculation is entirely analogous to modern anti-typhoid vaccination. It is not so applicable, however; the bacilli are apt to cause unexpected harm, and reinoculation is necessary to maintain the immunity, since it gradually fades away. It has been tried with cattle, but the success was short-lived and it is now considered impracticable and has been abandoned.

Whether or not, instead of a protective inoculation we may discover a method of destroying the bacillus in the body, is a question now uppermost in the minds of the laboratory workers. This hope is now held reasonable because of the success in malaria with quinine and in syphilis with salvarsan. Some chemical compound may be found to compass our dream of the conquest of tuberculosis. Much work has already been done and will be continued hopefully.

Until that goal is reached, the treatment of tuberculosis in the individual patient should resemble the methods of Nature, nor should we interfere too much with Nature by administering depressing drugs.

*Rest* is the first requisite in active or progressive disease. It is well supported by experience and experiment.

*Food* in abundance and variety—we have no better medicine.

*Fresh air and light*, also in abundance.

*Regulated exercise* during convalescence or quiescence of the disease.

*Medication* for symptoms as they arise, and chiefly when complications cause severe pain or distress.

*Lastly, a wise physician*, gifted with common sense and understanding.

These are the great principles of treatment, and, doubtless, they will be required as adjuncts of the greatest specific that the world may yet find.

## Original Articles.

### THE CARREL-DAKIN METHOD OF TREATING SEPTIC WOUNDS; ITS APPLICATION TO CIVIL SURGERY.\*

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At the beginning of the present war, wounds were treated according to classical rules plus a certain amount of "faith in God." As a result, the number of deaths from sepsis far exceeded the fatalities on the battlefield. The fact that the recent wars had been fought on virgin soil, containing few, if any, pathogenic bacteria, while the present war, especially on the western front, is being waged over ground that has been under intensive cultivation for years and contains almost every conceivable variety of organisms, was at first given scant attention.

Later, as the bacteriology of the soil was studied and the mortality statistics from sepsis told their terrible story, a "stampede of discouragement" pervaded the ranks of military surgeons, and innumerable ideas for combating sepsis were advanced. Chief and worst among these were the mutilating operations, such as amputations, excisions of ends of bones and resection of joints,—a revival of Civil War surgery in the United States.

By the introduction of these methods sepsis was controlled to a certain extent, but there were many deaths from shock and a large number of those who survived were incapacitated for life. As a result, military surgeons began to look about for some effective germicide to control sepsis and avoid maiming operations. A host of new and old preparations of varying germicidal value were and are still being advocated. Some of these are claimed to be so highly germicidal that the dressing need not be changed for 7 to 14 days, thus giving the patient a rather offensive, though possibly not dangerous, pus poultice. A certain number of these antiseptics have been tested in the laboratory and found to be of value.

It may be of interest to mention briefly a few of these mixtures: H. Vincent<sup>1</sup> recommends dusting war wounds, after mechanical cleansing of the wound, with a powder of calcium hypochlorite and boric acid, 1 and 10 parts. He asserts that this powder has a powerful sterilizing action and seems to ward off gas gangrene. It does not harm living tissues, favors cicatrization, is a hemostatic and may be applied directly to the brain without harm.

\* Extracts from papers read before the Middleboro Medical Society, March 14, 1917; Fall River Medical Society, April 11, 1917; Brockton Medical Society, May 10, 1917; Haverly Medical Society, May 29, 1917.

Delbet and Antoine<sup>2</sup> advocate irrigating wounds with a 12% solution of magnesium chloride, one of whom, Delbet, states that many wounds have been sterilized and closed by this method. These authors advise irrigating with a weak solution of acetic acid M vii to 1 liter of saline solution if the reaction of the discharge is alkaline, and soda bicarbonate in saline solution if the reaction of the discharge is acid.

Cheyrou<sup>3</sup> favors the Menci re method of forcibly spraying all crevices of a wound, after the surgical toilet has been performed, with a solution composed of iodoform, guaiacol, eucalyptol, Peruvian balsam, alcohol and ether. This has an embalming effect on the tissues.

The Lemaitre method of painting the entire wound surface with tincture of iodine, after mechanical cleaning out, is well known and extensively used in civil practice.

Anderson and Chambers<sup>4</sup> advise the use of a paste composed of iodoform  $\text{Zii}$ , bismuth subcarbonate  $\text{Zi}$ , and liquid paraffine. This is to be applied after cleaning out the wound; the wound is then closed with interrupted sutures. These authors report most gratifying results with the use of the paste.

The hypertonic salt solution dressings of Sir Almroth Wright have been used extensively by British surgeons. This method has been described in numerous articles by the author. A very illuminating communication on saline dressings has been written by Kenneth Taylor<sup>5</sup> which leaves one somewhat in doubt as to the efficacy of this method.

During the early months of the war, when sepsis was taking its heaviest toll from the wounded, Carrel, in conjunction with Dakin, began his researches on the treatment of war wounds with hypochlorites in Tuffier's Clinic at Hospital Beaujon in Paris. And to him, more than to any man in the present war, is due the honor of having arrested the so-called "stampede of discouragement," its resulting mutilating operations and experimentation during this period of the war.

The Carrel-Dakin method has not been universally adopted in French hospitals, but where it has been used it has resulted in an enormous decrease in the number of septicemias, amputations, resections of bones and excision of joints. And since this method has given such gratifying results in the treatment of war wounds and offers a solution to some of the problems in treating sepsis in civil practice a repetition of the method of making Dakin's solution and the principles of the application of the Carrel method of treating septic wounds seems to the writer justifiable.

The Carrel method of treating wounds is based upon the fact that an infected wound, by mechanical and chemical means, can be sterilized or rendered free from bacteria and can then be closed by suture or adhesive tape as is done with a primary aseptic wound.

By mechanical means is understood the thorough and gentle removal of all infecting material, such as pieces of clothing, dirt, fragments of shell, etc.; of all dead tissue and free fragments of bone, and the opening up of all crevices of the wound where bacteria may have lodged.

By chemical means is understood the introduction into all crevices of the wound, by means of rubber tubes, of a solution which is non-toxic, does not injure healthy tissues but dissolves necrotic tissue and is strongly bactericidal.

As Desfosses<sup>6</sup> very aptly puts it: "Pasteur taught surgeons to wash their hands; Carrel has taught them to wash wounds."

For some time before the outbreak of the war Carrel had been studying the sterilization of experimental septic wounds in dogs at the Rockefeller Institute. As already stated, in the fall of 1914 Carrel and Dakin began the study of infected war wounds at Hospital Beaujon in Paris. After many experiments the solution which was finally accepted was prepared in the following manner:

140 gm. of dry carbonate of soda and 200 gm. of chloride of lime were placed in a bottle with 10 liters of water. This mixture was thoroughly shaken for one-half an hour and allowed to settle. Then the clear liquid was siphoned off and filtered through cotton, leaving in the bottle a precipitate of calcium carbonate. Then to the filtrate was added 40 gm. of boric acid and the solution was ready for use. This solution was unsatisfactory, owing to the variations in the amount of chlorine, due to the changes in the commercial chloride of lime. It was also irritating, which was thought to be due to the boric acid.

A change was then made and the "200-100-80" formula was used, which has been described in many articles in the literature and which, unfortunately, is still used by many druggists and hospital pharmacists. Like the first mixture, this solution contained a varying amount of chlorine, since a fixed amount of chloride of lime was used in each mixture. This was remedied by Daufresne<sup>7</sup> who titrated each sample of chloride of lime before making a solution, varying the amount of chloride of lime according to the amount of its chlorine content with a corresponding variation in the sodium carbonate and sodium bicarbonate. This was the method which Daufresne was using when I was at Carrel's hospital in Compi gne in January, 1917. He was experimenting at that time with the electrolysis method, which has since been used by one or two manufacturing houses in the United States.

The armamentarium necessary for making the Dakin-Daufresne solution is simple and can be procured at comparatively small expense. Figure 1 shows all of the necessary apparatus except a small bottle of phenolphthalein. A thorough knowledge of inorganic chemistry is not

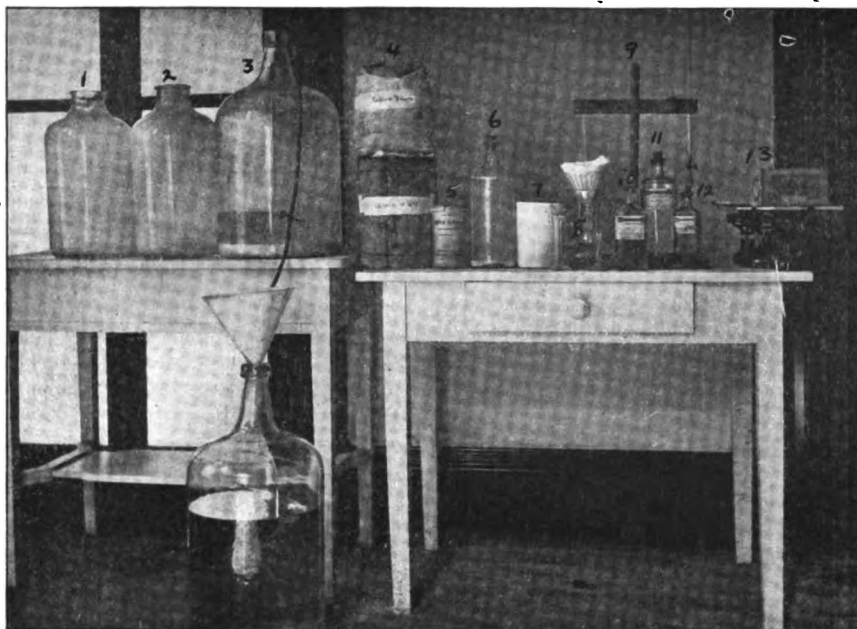


FIG. 1.—Armamentarium for making Dakin's solution: (1, 2) bottles for making small amount; (3) five-gallon bottles with siphon and filter set up; (4) sodium bicarbonate and chloride of lime; (5) sodium carbonate; (6) 20 g. chloride of lime in one liter water; (7) liter measure; (8) three small graduates for measuring c.c. and for titration; (9) burette; (10) 10% KI; (11) n/10 hyposulphite of soda; (12) glacial acetic acid; (13) balance.

necessary in making the solution, as many have inferred from the literature.

The steps in the process of manufacture are: After mixing the chloride of lime thoroughly, weigh out 20 gm. and put in a bottle containing one liter of ordinary tap water. Allow to stand 6 to 12 hours, shaking 2 or 3 times; then filter a small part of the liter. Take 10 c. c. of the filtrate, add to this in a beaker 20 c. c. of a 10% solution of iodide of potassium and 2 c. c. of glacial acetic or concentrated hydrochloric acid. This will give a mahogany-colored mixture. Then fill a burette with N-10 hyposulphite of soda, such as radiologists use in fixing x-ray plates. This solution is made by mixing 25 gm. of hypo. with 1 liter of water. Allow the N-10 hypo. in the burette to fall, drop by drop, into the mixture of chloride of lime, KI and acetic in the beaker until it is completely decolorized. Ordinarily, this should take from 12 to 14 c. c. of the hypo. The number of c. c. of hypo. used, multiplied by 1.775, will give the per cent. of chlorine in 100 gm. of chloride of lime. Thus, if 13.5 c. c. of N-10 hypo. were used in decolorizing, the per cent. of chlorine in the sample of chloride of lime would be 23.96. By using the table (see Figure 2) given by Daufresne for making 10 liters of solution, it is found that for 24% we need to use chloride of lime 192 gm., dry carbonate of soda 96 gm. and bicarbonate of soda 80 gm. Had we used the "200-100-80" formula, we would have had a mixture containing more than the required amount (0.45% to 0.5%) of chlorine, which would have been irritating on application. Next, put the 192 gm.

QUANTITIES TO EMPLOY IN PREPARING 10 LITERS OF DAKIN'S SOLUTION AT 0.45 TO 0.5% CLORINA.

TITRATION OF CHLOR- IDE OF LIME	CHLORIDE OF LIME	DRY CARBON- ATE OF SODA	BICARBONATE OF SODA
20	230 G	115 G	96 G
21	220	110	92
22	210	105	88
23	200	100	84
24	192	96	80
25	184	92	76
26	177	89	72
27	170	85	70
28	164	82	68
29	159	80	66
30	154	77	64
31	148	74	62
32	144	72	60
33	140	70	59
34	135	68	57
35	132	66	55
36	128	64	53
37	124	62	52

FIG. 2.—Daufresne's Table.

chloride of lime in a bottle with 5 liters tap water and the sodium carbonate and sodium bicarbonate in another bottle containing 5 liters of water. Shake these bottles from time to time, and allow to stand 6 to 12 hours. At the end of this time, pour the contents of one bottle into the other, shake and allow to stand about one-half an hour until the precipitate has settled to the bottom. Then siphon off the clear fluid, filtering it through a double filter paper into another bottle, and the Dakin's solution is ready for use. This solution should contain from 0.45% to 0.5% chlorine. To test this for chlorine, titrate as before, using 10 c. c. of the Dakin's solution. The

number of c. c. of hypo. used should be multiplied by 0.03725 to give the per cent. of chlorine. Thus, if 13 c. c. of hypo. is used:  $13.5 \times 0.03725 = 0.50\%$  of chlorine. To test the reaction of the solution, take a few c. c. in a beaker, drop into it a few grains of powdered phenolphthalein and shake. If the solution has been properly prepared there should be no coloration, while Javelle water and Labarraque's solution will give an intense red, indicating the presence of free caustic soda. The preparation of Dakin's solution, according to Daufresne's method, in the writer's opinion, is simple, does not require a special knowledge of chemistry and has been given here because of the persistent idea in the minds of many surgeons, who have not seen it prepared at Carrel's hospital, that its preparation is beyond the grasp of any but well-trained chemists or pharmacists.

In many of the smaller French hospitals where it is used, Dakin's solution is made by the surgeons or nurses, and in Tuffier's hospital at St. Germain where, next to Carrel's hospital, I saw the best results obtained with the Carrel-Dakin method of any hospital that I visited, the Dakin's solution was prepared by a French orderly.

As compared with Dichloramine-T, Dakin's more recent antiseptic, the manufacture of the Dakin-Daufresne solution is simplicity itself. Dichloramine-T may prove to be less expensive as a dressing for infected wounds than the Dakin-Daufresne solution, but under the present conditions in England and France it can never have the popularity that Dakin's solution has had, since during the time that I was in France, Chloramine-T, a substance very similar to Dichloramine-T, was almost unavailable and, second, it can be prepared only in a well-equipped laboratory under a very painstaking technic. Two of the requisites, especially at the present time, for an antiseptic to be extensively used are simplicity of manufacture and availability.<sup>9</sup> The cost of Dakin's solution is quite a factor when it is used as extensively as in French hospitals. Carrel,<sup>10</sup> in his recent book, gives the cost as .006 or 3-5 of a cent per liter. Buying the materials at retail prices, I have found the cost to be about 9-10 of a cent per liter.

The question of the proper method of preparing a wound for the instillation of Dakin's solution is one over which there is still some controversy between the radicals and conservatives. At first, there was such implicit faith in the power of the solution that very little was done to a wound aside from removing infecting material. The unsatisfactory results which followed caused a revival, to some extent, of the mutilating operations done following the wave of sepsis of the first few months of the war; such as excisions of the ends of bones for fractures near and communicating with joints, wide débridement of the path of the projectile and removing bone fragments, tendons and muscles.

As examples of this method, I have seen a bullet wound through the shaft of the tibia, about 3 or 4 inches from the lower end of the bone, treated by a removal of half of the shaft of the bone from the wound down, including the articular surface of the lower end of the tibia. Also, excision of the head of the humerus for comminuted fracture of the upper portion of the shaft. Such operations are pretty likely to remove most of the infected tissues so that there is little trouble from sepsis, but they leave a badly crippled limb requiring extensive reconstruction work later on. Gradually, the pendulum has swung back to a more conservative, rational procedure. Fewer amputations for severe fractures of the long bones, without injury to the main blood vessels, are done, and the number of excisions of the ends of bones has grown less.

The preparation of a wound consists of, first, full anesthesia and rigid aseptic precautions; then the removal of the torn skin edges of the wound, either with scissors or scalpel, opening the skin and soft parts by a generous incision; removal of all foreign matter, such as clothing, dirt, grass and fragments of shell; opening up and exploring all crevices of the wound; removal of dead and soiled tissue and small unattached fragments of bone. Fragments of bone attached to periosteum are left *in situ*. This is followed by careful hemostasis of the entire wound, as Dakin's solution dissolves blood clots and may cause secondary hemorrhage. Carrel advises the use of chromic catgut for ligatures as it resists the action of Dakin's solution best. This, in brief, is the method employed by conservative surgeons. It does not give the brilliant results in avoiding sepsis and the early healing of the wounds that the wide débridements and excisions give, but it gives a better functioning limb and less reconstructive work after any sepsis is controlled.

Through-and-through drainage should always be avoided, where possible, as better results are obtained where the solution stagnates in contact with all parts of the wound and is renewed by fresh solution every two hours. The irrigation tubes in such a wound should be carried to the bottom of the wound so that the fresh solution is injected into the depth of the wound, thus forcing out all necrotic material, discharge and old solution.

In regard to the apparatus necessary for the instillation of the solution, I am not of the opinion that the exact apparatus, as prescribed by Carrel, is essential to success; that any infringement on his rules "spells failure." Glass tubes, 2 to 6 branches distributors, and storage tanks made by Fontaine or Gentile of Paris, or by some of the commercial houses in the United States, add much to the appearance of the dressing, but have no bearing on the result.

The absolute essential in doing a dressing, as in all apparatus used about the wound, is asepsis. Whether rubber tubes 4 mm. in diameter

or 3 mm. are used; whether the syringe de Gentile or a syringe of the Triumph variety is used; so long as air-tight asepsis is preserved, the results will be the same. The old axiom that however septic a wound, may be, new strains of bacteria may be added, is accepted literally by the men who really follow Carrel's technic. All dressings should be done with sterile instruments, hemostats or forceps; sterile gloves are worn, but never should come in contact with the wound or any of the dressing materials used.

After removal of the soiled dressing, the skin about the wound is cleaned with naphtha, then the skin near the wound and the wound itself are washed with sterile pledgelets of cotton wet with salt solution or neutral oleate of soda, followed by salt solution. If the wound is a cavity or sinus, it should be irrigated with Dakin's solution. After drying the skin about the wound, it is covered with sterile yellow vaseline spread on with a sterile throat stick or, as is more frequently done, the skin is covered about the wound with a two-inch bandage which has been cut into six-inch strips, saturated with yellow vaseline and sterilized. If the wound is on the upper side of a limb the skin on the under side of the limb should be protected with vaseline, as Dakin's solution is irritating to some patients' skins. If the skin is not thoroughly protected with vaseline, small pustules form, which are uncomfortable and delay healing.

The wound is now ready for placing the irrigating tubes. Formerly, in surface wounds a thin layer of gauze was placed over the wound to keep the wound saturated, and the tubes placed on this. It was found that a thin film of muco-pus formed on the side of the gauze next to the wound, which prevented the solution from coming in contact with the wound when injected. In surface and penetrating wounds or cavities drained from the upper surfaces of a limb, rubber tubes should be placed in *contact* with the wound. The tubes on surface wounds should be tied off at the distal end and be perforated with 1 mm. holes one-half inch apart, the length of the tube corresponding with the size of the wound, so that when solution is injected, it is sprayed over the wound. Enough tubes should be used to insure spraying the entire wound. In wounds with a cavity or sinus draining from the superior aspect of the limb, an open-end tube with no perforations in the walls should be used. If, as occasionally occurs in a sinus wound, the sinus attempts to close near the surface, leaving an infected cavity below, the sinus should be enlarged, two large tubes inserted to prevent closure and the Carrel tube placed between these. In surface wounds which are not horizontal as the patient lies in bed, care should be exercised in placing the tubes that they remain at the upper part of the wound, so that the solution runs down over the

wound when injected. If this precaution is not taken, the upper part of the wound will not be flushed when the solution is injected, and the result vitiated.

In dressing perforating wounds, if extending from the superior to the inferior aspect of a limb, the orifice on the inferior aspect should be packed with gauze to prevent the solution running out at once, or the wound should be filled with gauze and a perforated tube inserted in the center of the gauze so that the gauze is kept soaked with solution.

Perforating wounds after the wound on the superior aspect has healed, or wounds penetrating the inferior aspect of a limb, are best treated by placing the patient in the ventral position. This point was well illustrated in one of my patients, a case of compound fracture of the shaft of the femur with a perforating wound, the wound on the inferior aspect of the leg healing rapidly when the patient was placed in the ventral position. See Figure 3.

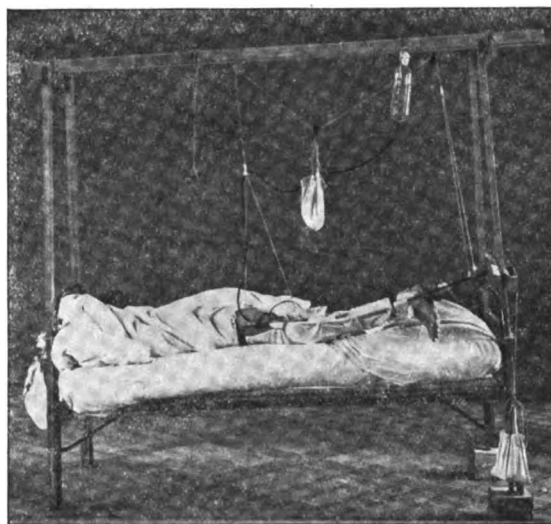


FIG. 3.—Compound fracture of left femoral shaft, perforating wound by *éclat d'obus*; wound on superior surface healed, wound on inferior surface treated by ventral position with extension in usual way. Rapid healing.

Perforating wounds are difficult to treat by the Carrel method as the gauze placed within the wound is saturated with Dakin's solution diluted with muco-pus from the wound, which is found, on taking smears from it, to contain many bacteria. This fact is made much of by Delbet<sup>11</sup> in his criticisms of the Carrel method. In such cases smears taken from the wound surfaces show a successively decreasing bacterial count, which Delbet does not take into consideration.

The Dakin's solution may be conveyed to the wound by means of a syringe, injecting each tube separately. This method is less effective than other methods, as there is danger of contaminating the outer end of the tube in the dressing. It is much more work than the second method. Also, in some hospitals I have

seen the same syringe and bottle containing the solution carried from one patient to another. This is mentioned only to be condemned, as there is always danger of infecting the syringe when the solution is injected. Where the syringe method is used, there should be a separate syringe and bottle of Dakin's solution for each patient.

The second method consists in connecting the tubes entering the wound with distributors (see Figure 4), these to be connected by rubber tubing with a storage flask placed some 18 inches to 2 feet above the level of the wound. By opening a pinchcock on the tubing the solution is allowed to flow into the wound. This method of flushing the wound can be carried out by orderlies in the hospital.

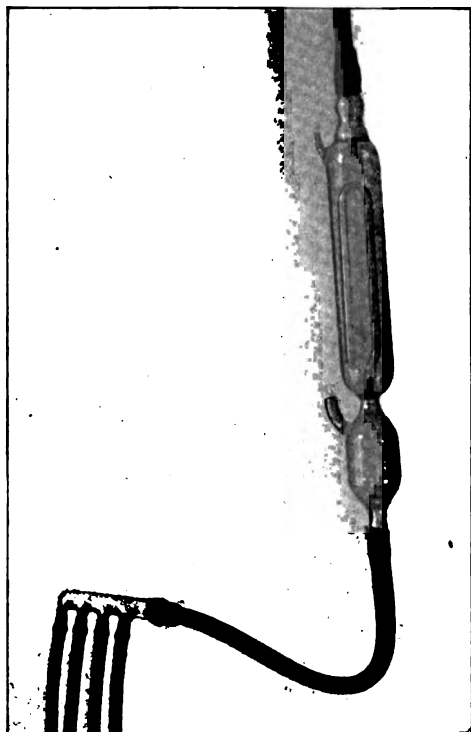


FIG. 4.—Tuffier automatic irrigator attached to tube from tank above and to tube leading to distributor to wound.

Tuffier<sup>12</sup> has devised a very ingenious automatic irrigator (see Figure 4) which flushes the wound every two hours. This device eliminates considerable work for nurses and orderlies of irrigating wounds by syringe or gravity. It is simply a small glass tube bent in the form of a U to act as a siphon, within a large tube which serves as a storage tank. This irrigator is connected with the large storage tank above and the tube going to the wound below. By means of a pinchcock the solution is allowed to drop into the irrigator from the tank above so that the irrigator is filled every two hours. When it is full the siphon in the irrigator empties it. These are made in different sizes, from one-half to two ounces.

The effectiveness of the treatment is con-

firmed by means of smears of the pus taken from the worst part of the wound. These smears are stained with methylene blue and the bacteria counted under a microscope. The progressive decrease in the number of bacteria per microscopic field is proof of the progress of sterilization of the wound. If the infection is a staphylococcus, the wound can be closed if the count shows 1 microbe to 10 microscopic fields on three successive counts. If the organism is a streptococcus or bacillus, the wound

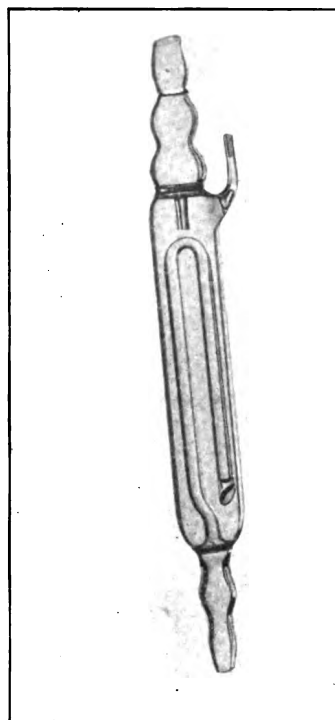


FIG. 5.—Tuffier small size irrigator.

should not be closed until no microbes are found in the smear. These wounds are not bacteriologically sterile, as in many cases they will show bacteria culturally, but for practical purposes of closure they are sterile. It is unnecessary to wait until a wound is culturally sterile before attempting closure.

The methods of closure of wounds are simple: First, non-operative, by drawing the wound edges together with adhesive bands. This method is slow and frequently results in considerable scar on healing. The second method, operative, consists in cutting around the border of the wound with a scalpel. The line of incision should be just in the border of the healthy skin. Then with scissors excising the thin margin of skin and new epithelium between the line of incision and granulations of the wound; after that, mobilizing the skin about the wound in the layer of subcutaneous fascia and approximating the skin edges with suture. The skin edges should be approximated over the granulations. Care should be taken in the operation to injure the granulations as little as



possible. It has been found that removing granulations is frequently attended with poor results. This method gives a flexible linear scar without contraction.

The results of the Carrel-Dakin method of treatment may be conveniently grouped under two headings:

1. A saving of men.
2. A saving of money.

It has been found that with this method of treatment many limbs can be saved which formerly were amputated, thus eliminating many severe operations when a patient was in shock following a wound. Septicemias and abscesses following wounds have been greatly reduced. At Carrel's hospital, from December 1, 1915, to October 1, 1916, there were only three abscesses following wounds and three amputations necessitated by septicemia. Better results than these can be obtained, as shown by Uffolz,<sup>13</sup> where the Carrel-Dakin method is used at the front and can be instituted within six hours after the patient is wounded.



FIG. 6.—*Coup-de-hache* amputation following compound fracture of shaft of femur, secondary hemorrhage, ligation of femoral artery resulting in gangrene.

From an economic viewpoint the closure of wounds of soft parts and compound fractures, after infection has been subdued, and the resulting healing by primary union, is an enormous saving over older methods of treatment. Carrel, Depage<sup>14</sup> and others have reported closing wounds of soft parts in 5 to 20 days after

instituting the treatment, which would have required many weeks to cicatrize. Compound fractures were, in many cases, closed in from 15 to 25 days, which would have required 6 to 8 months to heal by older methods of treatment—a saving of from 50 to 70% (Carrel) in the cost of treatment. A greater benefit still from this treatment is in the improved function of limbs as compared with other methods. This results in a greater probability of the patient's being able to earn a living after convalescence and, at the same time, a decrease in pensions.

A wound that requires six months to heal, in most cases, forms more scar tissue and is more liable to contracture than a similar wound which heals in four weeks. Also, a compound fracture which requires 6 to 8 months to unite and heal gives promise of less favorable ultimate results than one healing in six weeks.

Reviewing briefly the Carrel-Dakin method of treating wounds, we have, first, a solution that is simple and easy to make; which does not require a well-equipped laboratory or a special knowledge of chemistry; second, the ingredients of which it is made are always available. In regard to the method: in the hospitals and dressing stations where it has been used, it has proven that the inevitable sepsis following war wounds can be controlled; that many of the maiming operations which were done in the early months of the war to avoid sepsis were unnecessary; and that the mortality from sepsis can be greatly decreased as compared with older methods.

While the men who have studied this method of treating wounds at Compiègne have written little of the results of its use in civil practice, one would expect that the method would give as good results in killing domestic bugs as military bugs.

Tuffier was using Dakin's solution on all of his empyemas on his service last winter at Hospital Beaujon. His method was to fill the infected chest with Dakin's solution each morning and allow it to remain about one-half hour, then, turning the patient, allow the solution to run out. I have treated three empyemas recently by this method, with very gratifying results. There was a rapid decrease in the amount of discharge, an improvement in septic symptoms and an expansion of the lung at an earlier date than is usually seen. The latter symptom was very noticeable in Tuffier's cases, as he had x-rays taken at different periods showing the expansion of the lung.

In appendix abscess, my experience has proven that the Carrel-Dakin treatment should be used only on selected cases. In cases where the appendix has been removed and the abscess drained without much injury to the intestinal wall, the cigarette wicks can safely be removed about the fifth day and Carrel tubes inserted. The injection of Dakin's solution causes a sudden disappearance of fecal odor and rapid heal-



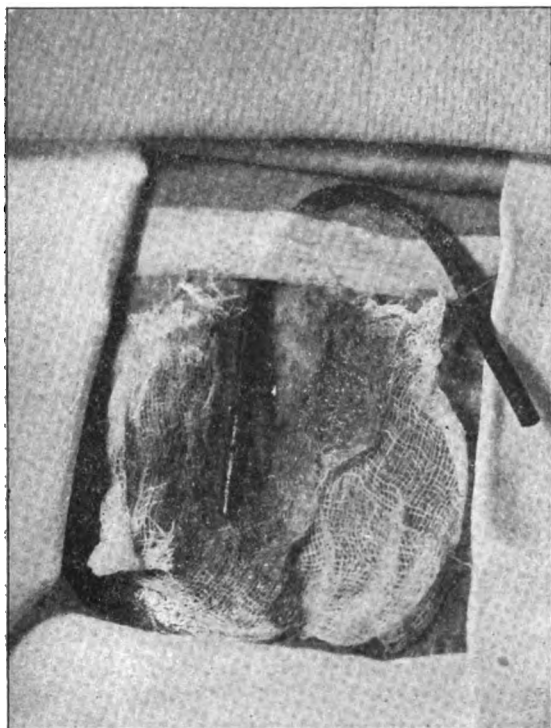


FIG. 7.—Drained appendectomy wound, unhealed after 12 weeks' treatment, healed in 2½ weeks under Carrel-Dakin treatment.

ing of the wound. But in cases where the appendix has been removed with difficulty, with separation of many adhesions and injury to visceral peritoneum, the injection of Dakin's solution by dissolving sloughing tissue may result in a fecal fistula or hemorrhage, as occurred in two of my cases.

The use of Dakin's solution in the treatment of puerperal sepsis has been described by Sherman.<sup>15</sup>

In sepsis of the extremities and localized sepsis, such as boils and carbuncles, it has been most effective, provided the infected area is laid open, allowing the solution to have free access to all parts.

In conclusion, it can be truly said that no other method of treating wounds in the present war has withstood the test of time and application under every existing condition and by many different surgeons that the Carrel-Dakin method has. Owing to the rather painstaking technic, it is not the ideal treatment; but where it is carried out according to the rules laid down by Carrel, the results have been uniformly better than by other methods thus far used. Its adoption in civil practice, in preference to the older methods of treating sepsis, will, in the writer's opinion, be attended with equally gratifying results.

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## SURGERY OF THE BILIARY TRACT.

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THE primary object of a hospital is the care of the sick. Our large university hospitals have another equally important mission,—the instruction of the medical profession. The vast amount of clinical material should be utilized for the advancement of medical knowledge, both in clinical teaching and in contributions to literature.

My admiration for the Mayos is greatly augmented by the Mayo Clinics and their prolific contributions to medical literature. They have greatly enriched the archives of surgery through the vastness of their clinical experience. We cannot all present our conclusions with the authority of a Mayo; we who must draw our deductions in the surgery of the thyroid, stomach, gall-bladder, etc., from a total with a decimal point at least once removed.

This should not deter any surgeon from the responsibility of contributing his quota to the general fund of medical knowledge, for if it does "take nine tailors to make a man" even so, "the ninth of a man then you are."

For years, the medical journals have contained many articles on the surgery of the biliary tract. Nearly all such papers resolve themselves into a discussion of cholecystotomy *versus* cholecystectomy. The tendency to gravitate in this direction reminds one of the propensity of the clerical mind in early New England to discuss the efficacy of infant baptism. The last word has not been said, but the experienced surgeon finds abundant opportunity for the employment of both operations.

Several years ago, the tendency was strongly in favor of cholecystotomy as the safer and more rational procedure. Even the influence of the Mayo Clinic was thrown in this direction. More recently, the pendulum has swung toward cholecystectomy, in view of the larger percentage of radical cures.

It would seem that before discussing the relative merits of two operations, one conserving and the other extirpating the gall-bladder, we might with profit dwell for a moment upon the physiological importance of the gall-bladder.

Physiology teaches us that the gall-bladder serves as a reservoir for the storage of bile while it is not needed, and that during digestion the contractions of the gall-bladder express the bile into the duodenum. This theory is refuted on the ground that, were this the function of the gall-bladder, its capacity would be far greater. With 40 ounces as an average daily output of bile, a gall-bladder with a capacity of only one or two ounces must be a negligible factor as a storage container. Moreover, the muscular coats of the gall-bladder are not constructed so that contractions of these muscles are capable of emptying this viscus. That the gall-bladder may act as a tension bulb, thus protecting the parenchyma of the liver from the evil influences of back pressure, has more to commend it. Perhaps the distention of the common duct after a cholecystectomy, as described by Judd, and in one case observed by the writer, may be Nature's method of compensating for the loss of the gall-bladder.

But whatever arguments pertain in regard to the physiological importance of a healthy gall-bladder, come to naught in reference to the treatment of the diseased gall-bladder. When diseased, the normal muscle tone of the organ is altered; its walls are thickened and inelastic. Cicatricial tissue, the result of long-continued irritation and inflammation, immobilizes the organ and diminishes its capacity. Gallstones encroach upon its lumen, and inflammatory processes occasion extensive external adhesions.

We, therefore, have no argument with the physiologist, as to the desirability of conserving a functioning gall-bladder. We are concerned rather with a pathological problem, whether a diseased organ can safely be left in the abdominal cavity. Upon this premise, we shall have something to say. Logically, the degree of pathology which is encountered must regulate our conduct in determining whether to extirpate the gall-bladder, or to drain.

It is now generally understood that the following conditions demand the removal of the gall-bladder:

Obliteration of the cystic duct resulting in hydrops;

Suppuration within the gall-bladder, known as empyema;

Gangrene;

Carcinoma when limited to the gall-bladder wall;

Strawberry gall-bladder, where yellow spots are seen upon the mucous surface, the result of chronic ulceration.

Concerning these conditions, there is unanimity of opinion that cholecystectomy should be done.

To these, I would add that my experience urges a greater field of application for removal of the gall-bladder. When the walls are thick-

ened, so that their contractile power is lost and regurgitant bile must stagnate in a functionally impaired organ, we have a condition favorable for the perpetuation of a chronic cholecystitis, with or without the formation of stones. In these cases, unfortunately, the gall-bladder may fail to contract and a long-continued and troublesome sinus persist.

A gall-bladder, the seat of a chronic inflammation, should not be left to jeopardize a patient's life and maintain a state of chronic invalidism from adhesion formation and subsequent contractions about the common duct, pylorus and duodenum.

How thoroughly I believe in the superiority of radical surgery of the gall-bladder, will be seen from the large proportion of cholecystectomies in my early experience. In the years 1914 and 1915, I fell from grace and performed more cholecystotomies, because of the admonitions of the surgical press.

I became distrustful of the superiority of cholecystotomy and soon found myself again within the fold, and fully convinced that radical cure was most frequently attained by extirpation of the gall-bladder. My personal experience has tended to a wide application of cholecystectomy, in view of the relatively small death rate.

But why talk about the relative mortality of these surgical procedures? A surgeon who drains the gall-bladder even under local anaesthesia in a patient *in extremis*, for gangrene and empyema, will have a higher mortality in cholecystotomy, for the large majority of these cases will commend themselves to him as suitable cases for drainage.

Should he elect to perform cholecystectomy in these desperate cases, then his mortality in cholecystectomy would exceed cholecystotomy. The patient's life is best conserved by two operations: first, drainage; and later, radical removal, if indicated.

If there be definite indications for cholecystectomy, there should be equally definite contraindications.

Cholecystotomy is indicated:

In patients desperately ill, where a prolonged operation cannot be tolerated;

In obese patients, where the gall-bladder is contracted, densely surrounded by adhesions and deeply imbedded beneath, and remote from the free edge of the liver. In other words, where it cannot be removed with relative safety, it should be incised, stones removed, and drained; for it is better to have a living patient than to perform an ideal operation.

In all cases of pancreatitis with jaundice, the gall-bladder should be conserved. It affords an excellent drainage tract for the bile passages, or may be utilized in shunting bile into the intestinal tract, or in the performance of cholecystenterostomy.

There remains a large number of cases of cholecystitis, where simple drainage of the gall-bladder may be curative; or cholelithiasis, where removal of gallstones and drainage may result in radical cure, provided the gall-bladder is not markedly pathological.

It is in these cases that the surgeon must decide whether to drain or excise. This decision may at times "make cowards of us all," for it is easier to drain than to excise.

The operation of cholecystectomy in certain cases may be technically difficult, but a complete restoration to health is the object sought. This, however, should be obtained without too great hazard. I am convinced that the relative mortality in these two operations is not essentially different in the hands of a skilful surgeon.

I am equally certain that in the hands of the novice the operation of cholecystectomy is attended by a far greater mortality; for the surgeon is working in a danger zone, unfamiliar with the anatomy. The pricking of the common duct, the throwing of a ligature about it, an injury to the portal vein, an insecure ligation of the cystic duct or the cystic artery, may result in disaster and death. These accidents are quite preventable and unlikely to occur in the hands of the expert.

The crux of the problem lies in the selection of the case where cholecystectomy can be safely performed, and the surgeon of limited experience may attempt to remove the gall-bladder when a man of wider experience could tell at a glance that a cholecystotomy was all that should be undertaken.

Probably every surgeon of wide experience has met with calamity in the performance of cholecystectomy, the most common mishap being the slipping or blowing off of a ligature about the cystic duct.

Among my early cases, I performed cholecystectomy upon an aged woman. As far as I know, the cystic duct was securely ligated. She was convalescing in a satisfactory manner and had begun to sit up, when very suddenly at night, she was taken with severe abdominal pain, acute distention of the abdomen and vomiting.

I was hurriedly summoned; a condition of acute peritonitis was suspected and her abdomen was immediately opened through the old incision. A large quantity of flocculent bile poured out through this wound. Without further manipulation, some drains were arranged through the abdominal wound and my patient made an uninterrupted recovery. Had there been any delay in instituting drainage, she would have succumbed to general peritonitis.

The relative merits of cholecystotomy *vs.* cholecystectomy must be decided upon the immediate mortality and the morbidity statistics following these procedures.

In a total containing twice as many cholecystectomies as cholecystotomies, the writer's mortality in cholecystectomy has been 3.6%, and in cholecystotomy, 20.4%. This points conclusively to the fact that the patients most critically ill have been treated by simple drainage. Many cases were in *extremis* and died shortly after operation.

In the morbidity following the two operations, my experience points strongly to the advantages of cholecystectomy. I reckon among my unpleasant experiences one case of re-formation of gallstones; two cases of stones overlooked; one case of persistent fistula, where the patient would not consent to a second operation; several cases of fistula requiring cholecystectomy, and numerous cases of persistent soreness in gall-bladder region, suggesting chronic cholecystitis and requiring the removal of the gall-bladder.

My experience with cholecystotomy seems to confirm the observations recorded by Deaver<sup>1</sup>, where he says that about 4.07% of his cases of biliary affections were secondary cases, where one or more previous operations had been made upon the bile passages. The most frequent recurrences after cholecystotomy were stones in the gall-bladder and common duct, with adhesions and stricture.

In a study of a series of cases by C. H. Mayo<sup>2</sup>, he found that 53% of cholecystotomy cases were cured and 71% of cholecystectomy. Mayo claims that cholecystectomy is indicated in 80% of gallstone diseases.

Lane says that cholecystectomy is the operation of choice in cholelithiasis. (*Jour. of A. M. A.*, Nov. 20, 1915, 9, 1794.)

Swope reports that 96.8% of cures follow cholecystectomy and 74.8% follow cholecystotomy. (*Am. Jour. Obstetrics*, Nov., 1915.)

My cholecystectomy cases are conspicuous for lack of complications; almost universal and complete relief has followed this operation. One case of flooding of the peritoneal cavity with bile, previously mentioned, and one case of cancer of the pancreas, eight years after cholecystectomy, are the only instances where I have been compelled to re-enter the abdomen.

The argument against cholecystectomy, on the ground that the gall-bladder, if left, may be a convenient guide to the common duct in case of secondary operation, fails to interest me, because the removal of the gall-bladder removes the atrium of infection, rendering subsequent operation exceedingly improbable.

Should it be necessary to explore the common duct, it would not seem that a previous cholecystectomy should present insurmountable obstacles.

Pancreatitis is frequently observed as a sequel of gall-bladder disease. Deaver and Pfeiffer<sup>3</sup> have pointed to the manner in which this infection is carried from the inflamed gall-

bladder to the peri-pancreatic tissue by way of lymphatic circulation, resulting in pancreatitis.

In describing the method of infection, Deaver calls attention to the communication between the pancreas and the lymphatics of the stomach, duodenum, spleen, liver, gall-bladder, ducts, colon and left suprarenal.

The lymphatics arising from these sources are closely related to those of the surface of the head of the pancreas, and inosculate directly with the efferent lymph channels from that organ. He claims that the inflammation of the head of the pancreas, so frequently observed in cholecystitis, corresponds to the lymphatic distribution and not at all to the duct distribution, as would be the case if resulting from ascending duct infection.

This explanation of the method of transmission of infection makes plain the reason for the enlargement and induration so frequently observed in the head of the pancreas. On the theory of an ascending duct infection, it would be difficult to explain why the head of the pancreas should show a greater degree of involvement than the body of this organ.

When the head of the pancreas is involved, Deaver logically recommends cholecystectomy, for in that way he removes the source of the infection. In case the pancreas is chiefly affected, he advises against the removal of the gall-bladder; but drains and preserves it for a cholecystoduodenostomy, in case the common duct should become permanently obstructed.

I have no new technic in the operation of cholecystectomy. I believe in an incision sufficiently long to expose readily the under surface of the liver in the region of the gall-bladder. I recognize that the typical American operation of cholecystectomy is performed by dissecting the gall-bladder from below upward, first severing the cystic duct and ligating the cystic artery. The gall-bladder can then be readily stripped from its sulcus in the liver without bleeding.

Personally, I prefer to perform this operation in reverse order, first cutting around the gall-bladder at a point about one-half inch away from the liver. By dry dissection, the fundus of the gall-bladder is separated from the liver, from above downward, until the cystic duct is reached.

When bleeding from the cystic artery is encountered, a hemostatic forceps is applied. A cuff of peritoneum is fashioned about the cystic duct, which is clamped with artery forceps both above and below the point where it is severed. I then grasp the distal end of the cystic duct and pass a probe downward into the duodenum. I do not probe upward into the hepatic duct unless indicated.

If the ducts are free, two chromic ligatures are thrown about the cystic duct, the lower tied

rather loosely and the upper with considerable force. A drop of carbolic acid is then applied to the stump; the stump is buried beneath the peritoneal flap which was previously fashioned.

The denuded area occasioned by removal of the gall-bladder is then closed by bringing together, with catgut sutures, the peritoneal flaps which were fashioned as the first step in cholecystectomy.

I am aware that this technic is not the accepted procedure of the day; nevertheless, I am convinced that it is a safer method of removing the gall-bladder than the initial severing of the duct.

I have never experienced any of the calamities which are described as a complication of cholecystectomy; have never injured the common duct; nor is there any likelihood of doing this when the operation is made from above downward. A recent article by Major G. Seelig of St. Louis, on cholecystectomy calls attention to the desirability of this method.

I am appending statistics of the surgery of the biliary tract at the Massachusetts Homeopathic Hospital during a period of 11 years. It should be remembered that this is a large general hospital in the center of Boston, and the great proportion of its patients come from this city and its suburbs. Many patients in desperate condition, suffering from acute gall-bladder diseases, naturally come into our clinics.

A large percentage of our cases should be classified as acute, and includes acute cholecystitis, hydrops, gangrene associated with pancreatic disturbance and with stones in the common duct. These statistics include several cases of patients *in extremis*, where the propriety of any operation was questionable.

In the years 1912, 1913 and 1914, 139 cholecystotomies and 57 cholecystectomies were performed. In the three years following, the figures are reversed and we had 76 cholecystotomies and 95 cholecystectomies. This reversal is probably due to the trend of literature in favor of cholecystectomy, corroborated by the personal experience of our surgeons.

In 1914, the hospital established a follow-up system. The replies from patients received since that date show nine unsatisfactory results from cholecystotomy and two from cholecystectomy.

From our statistics, it will appear that the mortality in cholecystectomy is lower than in cholecystotomy by 2.3%. We are not justified, however, in concluding that one operation is safer than the other, as cholecystotomy was employed in the more severe cases.

The end-results, both in our hospital statistics and in my own private work, corroborate the statement previously made in this paper, that the operation of cholecystectomy has given more satisfactory permanent cures.

<b>Cholecystotomy</b>				
Total .....	333			
Deaths .....	38			
Total death rate .....		11.4%		
Cancer deaths .....	5			
Death rate (excl. cancer) .....		10%		
<b>Cholecystectomy</b>				
Total .....	263			
Deaths .....	24			
Total death rate .....		9.1%		
Cancer deaths .....	4			
Death rate (excl. cancer) .....		7.7%		
<b>Choleldochotomy</b>				
Total .....	32			
Deaths .....	6			
Total death rate .....		18.7%		
Cancer death .....	1			
Death rate (excl. cancer) .....		16%		
<b>Cholecyst-enterostomy</b>				
Total .....	9			
Deaths (all from cancer) .....	3			
Death rate .....		33.3%		
Total cases gall-bladder surgery .....	637			
Total deaths .....	71			
Total death rate .....		11.1%		

## REFERENCES.

- <sup>1</sup> Surg., Gyn. and Obstet., October, 1917.  
<sup>2</sup> Collected papers of the Mayo Clinic, 1915, 7-262.  
<sup>3</sup> Am. Jour. Med. Sci., April, 1912.

## LIPOIDS IN 131 DIABETIC BLOODS.

BY HORACE GRAY, BOSTON.

[From the Department of Biological Chemistry,  
Harvard Medical School.]

(Continued from page 94.)

## WEIGHT.

*Low or High Weight.*

In order to study the relation of weight to the lipoids it should be noted that:

1. The patient's weight taken for consideration has been not the Maximum Weight (so-called "best weight"), nor the Onset Weight (which incidentally often coincides with the maximal weight, and very likely should always coincide if patients only noted carefully enough their earliest symptoms), but the Weight Today (*i.e.*, when the blood specimen was drawn).

2. This weight has not been considered in its absolute level, but only in its level relative to the normal,\* *i.e.*, whether under or over weight.

\* Means, J. H.: The Basal Metabolism in Obesity, Arch. Int. Med., May, 1916, xvii, 706, 704-710.

This relation has been calculated by the formula:

$$\frac{\text{Patient's weight minus normal weight}}{\text{Normal weight}} = \%$$

over (+) or under (—) weight

3. Now the standard normal table should show the average weight not merely for each sex or age or height, but rather for each sex and year of age subdivided according to height. The most recent of such tables that I have been able to find have been reprinted recently in this JOURNAL (December 27, 1917) because they are so useful and because published in reports

which, though in print, are apt to be found only in special and often inaccessible libraries. Both were published in feet and inches and pounds, hence the use of these in this paper rather than

TABLE XIX.

RELATION OF WEIGHT WHEN BLOOD WAS TAKEN.

BLOOD LIPOIDS IN PER CENT.

PER CENT. OVERWEIGHT + UNDERWEIGHT —	NO. OF BLOODS	TOTAL-FAT		TOTAL FATTY ACIDS		LECITHIN		CHOLESTEROL		GLYCERIDES		T. F. A. C.		L. C.		TOTAL LIPOIDS				
		W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.					
+21 and over (max. +63) .....	4	0.81	0.88	0.59	0.67	0.34	0.31	0.22	0.43	0.22	0.22	0.36	0.08	0.63	2.88	0.88	1.42	0.97	2.17	0.91
+11 to 20 .....	5	0.49	0.90	0.58	0.67	0.48	0.30	0.22	0.37	0.21	0.23	0.16	0.45	0.22	2.05	3.10	1.27	1.37	0.94	2.11
+1 to 10 .....	6	0.87	1.01	0.63	0.73	0.49	0.32	0.26	0.42	0.24	0.28	0.19	0.45	0.21	1.96	2.89	1.15	1.40	0.95	2.30
±0, <i>i.e.</i> normal ...	2	0.62	0.70	0.42	0.50	0.28	0.28	0.21	0.20	0.20	0.21	0.20	0.29	0.01	1.49	2.44	0.79	2.43	1.03	2.13
-1 to -10 .....	15	0.74	0.88	0.55	0.63	0.44	0.30	0.24	0.37	0.23	0.25	0.20	0.36	0.21	1.86	2.51	1.30	1.35	1.03	2.00
-11 to -20 .....	19	0.97	1.11	0.73	0.79	0.47	0.34	0.28	0.43	0.27	0.31	0.21	0.50	0.22	1.92	2.90	1.10	1.31	1.01	2.08
-21 to -30 .....	29	1.15	1.44	0.86	0.99	0.49	0.39	0.39	0.42	0.38	0.46	0.25	0.55	0.23	1.89	2.16	1.22	1.11	0.88	1.81
-31 to -40 .....	19	1.62	2.13	1.15	1.50	0.76	0.43	0.42	0.43	0.46	0.58	0.27	1.12	0.51	2.73	3.62	1.83	1.00	0.74	1.94
-41 and under (min. -59) .....	10	1.58	1.88	1.53	1.38	0.71	0.30	0.38	0.42	0.41	0.52	0.21	0.95	0.49	2.38	3.15	1.65	1.05	0.78	2.13
+11 and over .....	9	0.80	0.89	0.59	0.67	0.44	0.31	0.22	0.40	0.21	0.23	0.17	0.41	0.17	1.89	2.93	1.12	1.39	0.95	2.13
+10 to -10, <i>i.e.</i> broad normal .....	23	0.77	0.90	0.56	0.64	0.44	0.31	0.24	0.39	0.23	0.26	0.19	0.39	0.20	1.86	2.60	1.20	1.37	1.00	2.10
-11 and under ....	77	1.26	1.59	0.92	1.12	0.57	0.39	0.37	0.42	0.37	0.41	0.24	0.73	0.32	2.22	3.00	1.37	1.13	0.86	1.96

the preferable metric units. It will be noticed that the insurance table, "age 15 and over," is unfortunately *with* clothes and shoes. The formula recommended in the recent article on normal weight could not be used for the present article, owing to ignorance of the chest circumference of each patient.

After the per cent.  $\pm$  over or under weight had been calculated, the bloods were grouped by these per cents. and each group was averaged, with the results given in Table XIX.

In Table XIX the total-lipoids for those *either* under or over weight appear greater than for those whose weight is what it should be. But this peculiar result may well be due to the small size of the latter group, *i.e.*, only two specimens. If we make a further average in total-lipoids of those within 10%  $\pm$ , which is if anything an unnecessarily restricted normal, we get 0.99 g. per 100 cc., while all those more than 10% overweight average 0.96, and those more than 10% underweight average 1.72. Furthermore, *underweight* is accompanied by marked rise, not only of total-lipoids, but of all lipoids individually: total-fatty-acid, lecithin and cholesterol. *Overweights* have lipid averages of little interest, *i.e.*, slightly above those for normal weights in total-fatty-acids and in glycerides in plasma, but slightly *below* normal in glycerides in corpuscles, in lecithin, and in cholesterol. This increase is apparently proportional in total-fat and cholesterol, less noticeably so in lecithin.

#### LOSS OF WEIGHT.

Is great loss of weight accompanied by low lipoids? To determine this loss, the Maximal Weight and the Weight Today (*i.e.*, the time of the last specimen obtained) have each been expressed as the %  $\pm$  normal, already explained; and the number of points difference between these two percentages has been taken as the criterion. That the *greatest* loss of weight was here accompanied by the *lower total-fat* is apparent only if the list is averaged in upper and lower halves separately, when we see that the lower half, *i.e.*, the 24 greatest losers, had the lower total-fat—0.84. Cholesterol was precisely the same in both halves.

TABLE XX.

#### LOSS OF WEIGHT.

LOSS OF WEIGHT, EXPRESSED AS DIFFERENCE BETWEEN MAX. WT. AND WEIGHT WHEN BLOOD WAS TAKEN; WEIGHT IN EACH CASE HAVING BEEN EXPRESSED AS PER CENT. ABOVE OR BELOW NORMAL STANDARD.	NO. OF BLOODS	BLOOD LIPIDS IN PER CENT.	
		TOTAL-FAT CHOLESTEROL	
		W. B.	W. B.
0—20 .....	20	0.90	0.28
21—30 .....	13	0.93	0.26
31—40 .....	13	0.95	0.32
41—50 .....	10	0.80	0.25
51—60 .....	7	0.99	0.24
61 and over .....	7	0.73	0.36
0—40 .....	46	0.92	0.28
41 and over .....	24	0.84	0.28

#### DIETARY FAT.

When ingested fat was more than 40 grams, total-fat was extraordinarily steady at about 1.25%, as compared with about 0.8% when diet fat was 1-40 g. The curious point is that when no fat at all was eaten the total fat averaged high again—also 1.25%.

L. and C. both show the same points as T.F.

TABLE XXI.  
INFLUENCE OF DIETARY FAT IN PRECEDING 24 HOURS.

DIETARY FAT IN G.	NO. OF BLOODS	TOTAL-FAT		TOTAL FATTY ACIDS		LECITHIN		BLOOD LIPIDS IN PER CENT. CHOLESTEROL		GLYCERIDES		T. F. A. L.		L. C.		TOTAL LIPIDS	
		W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.
0	24	1.25	1.48	0.92	1.09	0.34	0.32	0.33	0.39	0.22	0.74	2.51	3.22	1.20	0.94	1.87	1.63
1—20	9	0.87	0.93	0.65	0.69	0.29	0.24	0.22	0.24	0.18	0.42	2.03	2.95	1.40	0.98	2.12	1.00
21—40	4	0.70	1.48	0.50	1.08	0.30	0.28	0.20	0.41	0.20	0.75	1.63	3.50	1.50	0.79	2.47	1.60
41—60	6	1.27	1.89	0.89	1.24	0.41	0.39	0.38	0.48	0.23	0.83	2.28	3.11	1.04	0.89	1.80	1.88
61—80	11	1.23	1.65	0.84	1.16	0.37	0.39	0.39	0.49	0.23	0.73	2.11	3.09	1.05	0.80	1.85	1.77
81—160	15	1.23	1.36	0.88	0.95	0.39	0.33	0.35	0.41	0.24	0.58	1.89	2.22	1.16	0.87	2.10	1.49

TABLE XXII.  
INFLUENCE OF FASTING.

NO. OF DAYS FASTING	NO. OF BLOODS	TOTAL-FAT		TOTAL FATTY ACIDS		LECITHIN		BLOOD LIPIDS IN PER CENT. CHOLESTEROL		GLYCERIDES		T. F. A. L.		L. C.		TOTAL LIPIDS	
		W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.
1	4	1.14	1.36	0.71	0.94	0.43	0.40	0.43	0.42	0.29	0.57	1.53	2.58	1.05	0.79	1.71	1.69
2	2	2.54	2.82	2.02	2.15	0.39	0.43	0.52	0.67	0.28	1.67	4.38	4.08	1.14	1.00	1.44	3.03
3	1	1.08	1.22	0.83	0.95	0.35	0.26	0.25	0.27	0.21	0.69	2.37	3.65	1.40	0.96	2.24	1.33

Total-lipoids also, except that its low level corresponds not to 1-40 grams dietary fat, but to the smaller group, 1-20 grams.

#### FASTING.

Unfortunately no two of these seven specimens came from the same patient on successive days. From Table XXII, the lipoids appear increased after the second day of fasting, while after the third they become lower than after the first day. More data are imperative to furnish conclusions.

#### ACIDOSIS.

Acidosis goes with increased lipoids, but the striking feature of Table XXIII is that compared with diabetics without acidosis, the lipid increase is twice as great with moderate acidosis as with severe. The greatest percentile increase is in glycerides in the corpuscles, 145%; then glycerides in plasma; after that total-fatty-acid in corpuscles, then in plasma. Cholesterol is pushed up much less, and lecithin still less.

#### CARBOHYDRATE BALANCE.

When the carbohydrate balance is 0 or negative, one would expect to find the lipoids increased. This is in fact true, as seen in Table XXIV.

It is most clearly shown by the column for *total-fat* in W.B., where:

1. The values corresponding to a balance of 0 or less are higher than the values corresponding to any positive balance.

2. When the balance is negative, a striking feature is that the lipid value is lower, not higher, than when the balance is 0. Furthermore, it is enough lower to be closer to the value for a plus-balance than to the value for 0-balance.

3. As the plus-balance increases, the corresponding lipid values decrease, and progressively so, except for the 1.04 corresponding to 1 to 20 g. balance.

*T.F.* in plasma is irregular in many respects.

*T.F.A.* in W.B. parallels *total-fat* in W.B., here as usual; in plasma and in corpuscles it is inconclusive.

*Lecithin.* 1 and 2. The lipid value corresponding to 0-balance is higher than for +balance. The value for a minus-balance is not merely less than 0-balance, but is the same as +balance.

3. Until the balance has increased to +81 or more, there is no lipid decrease.

*Cholesterol* behaves like lecithin.

*Glycerides* in W.B. act like *T.F.* in W.B., but instead of only one exception, under point 3, show two irregularities.

*Total-lipoids* may have the same said of them.

The other columns are not significant.

TABLE XXIII.

#### INFLUENCE OF ACIDOSIS.

Acidosis	No. of Blooms	Blood Lipoids in Per Cent.																TOTAL LIPIDS				
		TOTAL-FAT			TOTAL FATTY ACIDS			LECITHIN			CHOLESTEROL				T. F. A.		L. C.					
		W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.	W. B.	Pl.	Cps.			Pl.			
0	81	1.02	1.24	0.72	0.87	0.48	0.35	0.31	0.41	0.31	0.37	0.22	0.52	0.22	1.95	2.74	1.14	1.22	0.91	0.96	1.36	
Moderate	20	1.45	1.75	1.07	1.30	0.78	0.37	0.35	0.38	0.39	0.45	0.25	0.92	0.54	2.67	3.41	2.18	1.11	0.86	1.67	1.95	
Severe	16	1.17	1.47	0.86	1.07	0.48	0.37	0.34	0.41	0.35	0.37	0.20	0.68	0.24	2.18	2.67	1.29	1.28	0.95	2.28	1.59	
% { above (+) } % { below (-) } diabetic bloods without acidosis, shown by:	Moderate av. of 81 Severe	42	41	49	49	68	6	18	7	—	26	22	14	88	145	87	24	91	—	—	43	
		15	19	19	23	0	6	10	0	0	13	0	9	31	9	12	8	8	5	4	188	17



TABLE XXIV.  
INFLUENCE OF CARBOHYDRATE BALANCE OF PRECEDING 24 HOURS.

CH BAL. IN G.	NO. OF BLOODS	BLOOD LIPIDS IN PER CENT.																		TOTAL LIPIDS	
		TOTAL-FAT			TOTAL FATTY ACIDS			LACTIC ACID			CHOLESTEROL			GLYCERIDES			T. F. A.				L. C.
		W. B.	P. I.	Cps.	W. B.	P. I.	Cps.	W. B.	P. I.	Cps.	W. B.	P. I.	Cps.	W. B.	P. I.	Cps.	W. B.	P. I.	Cps.		
-83 to -1	6	1.22	1.52	0.98	1.17	0.63	0.35	0.33	0.38	0.29	0.35	0.18	0.85	0.39	2.50	2.63	1.75	1.29	0.99	2.31	1.66
0	8	1.67	1.77	1.15	1.29	0.89	0.41	0.40	0.41	0.42	0.48	0.25	0.92	0.76	2.59	3.13	2.48	1.13	0.89	1.81	2.09
+1 to 20	13	1.04	1.67	0.73	0.91	0.32	0.35	0.31	0.40	0.31	0.37	0.25	0.50	0.06	1.60	2.79	0.80	1.16	0.86	1.80	1.36
21 to 40	11	1.20	1.04	0.88	0.96	0.67	0.35	0.33	0.37	0.32	0.38	0.22	0.61	0.43	2.43	2.94	1.82	1.26	0.97	1.88	1.46
41 to 60	15	1.17	1.67	0.82	1.12	0.55	0.35	0.32	0.40	0.32	0.45	0.23	0.75	0.22	2.26	3.30	1.35	1.09	0.83	1.81	1.70
61 to 80	11	1.11	1.47	0.78	1.07	0.49	0.36	0.32	0.43	0.33	0.40	0.19	0.73	0.25	2.11	3.28	1.23	1.12	0.87	2.26	1.61
81 to 283	5	0.76	0.85	0.47	0.54	0.37	0.32	0.25	0.40	0.29	0.31	0.22	0.24	0.08	1.49	2.23	0.92	1.14	0.86	1.82	0.92

(To be concluded.)

## Clinical Department.

### PARALYSIS AGITANS AND MYOPATHIC DYSTROPHY OCCURRING IN UNCLE AND NEPHEW, WITH EVIDENCES OF INTERNAL GLANDULAR DYSCRASIA IN THE LATTER.

BY MICHAEL OSNATO, M.D., NEW YORK,

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WITHOUT attempting to draw any conclusions from the two cases about to be reported, it is, nevertheless, necessary to point out the fact that there has been considerable discussion recently as to whether paralysis agitans, on the one hand, and certain types of muscular atrophy on the other, are not caused by disturbances in the function or development of the glands of internal secretion. Nothing has been proven definitely to support this contention, nevertheless the work of Timme with certain cases of muscular atrophy and the parathyroid hypothyroidism, supported by Roussy and Clunet, are sufficiently suggestive to make a report of two cases of this kind justifiable. The recent work of Farhon and Farhon, quoted by Falta (p. 463), is confirmative apparently of their findings as regards the parathyroid in paralysis agitans.

Timme (Proceedings of the N. Y. Neurological Society, published in the *Journal of Nervous and Mental Diseases*, March, 1917) has seemed to place the pineal gland in suspicion as the causative factor in muscular atrophy, particularly of the infantile, familial type. The case here reported seems to show the pineal shadow such as described by this author, and it also shows an unusually large and deep sella turcica, and there is some evidence of pineal dysfunction in the history of the case.

Both these patients have been under observation for a number of years on the Chronic Male Service of Doctors Brush and Browning at the Kings County Hospital.

The relationship between these patients is that of uncle and nephew, the older man being the brother of the younger man's mother. The older patient suffers from a typical paralysis agitans, the younger patient suffers from muscular atrophy of the Leyden-Moebius or infantile type.

The two cases are as follows:

CASE 1. A. D., age 80, widower; was perfectly well until the age of 72. At this time he noticed a tremor, which began in the right thumb and wrist, and gradually spread to the fingers and arm and forearm, and finally to the same place on the other side. At about this time, also, he became weak and stiff and did not walk as well as previously, and noticed that his memory was failing. He finally had to quit work because of these complaints. He was admitted to the Kings County Hospital in June, 1913, remained for six weeks, and

then was readmitted in April, 1916. On his last admission, it was found that he could not walk at all without assistance and that his tremor had become practically generalized, involving his head, both lower and upper extremities and face, and also his tongue. He was very much demented, disoriented as to time and place and for dates, and his speech was rambling and incoherent.

The *previous history* is that he always was a heavy and steady drinker, although at times he drank more than others. Venereal disease is denied, and the patient is said never to have suffered from convulsions and has never sustained any unusual or severe trauma, nor any serious illness.

The *family history* shows that the patient's father and mother died from causes unknown, when they were quite old; exact age not ascertainable. The patient was married at 34, had four sons and one daughter; three sons are now living; one son died from causes unknown. All five children had defective eyesight from early youth. The patient's wife died suddenly from heart disease at the age of 58. There is said to have been no mental trouble or insanity or epilepsy in the family.

*Physical and Neurological Examination.*—The patient is a very old man, fairly well nourished, with a blank expression on his face and sits, for the most part, quietly and without being able or willing to move very much. He has to be assisted to and from his bed, into his chair, and has to be spoon fed. He has a generalized tremor involving all four extremities, the head, face and tongue. This tremor is rhythmical, very regular, is static in character, but is made much more marked by stress and motion, has but little force and small amplitude, and disappears during sleep. In the head it causes to and fro nodding movements of a very rhythmical character. In other words, it is a typical paralysis agitans tremor. The patient also shows the typical deformity suggestive of this condition, particularly marked in the attitude of the fingers and hand, which appear in the posture usually described as pill rolling.

*Coordination.*—Both equilibratory and non-equilibratory are good. The patient cannot walk, and skilled acts are impossible of performance, both on account of the tremor and also on account of the deformity due to the paralysis agitans condition. Speech, however, is mechanically properly performed, but the patient talks in a rambling and incoherent manner, which will be described later.

*Reflexes.*—Both deep and superficial are equal and active and there is no Babinski and no clonus. The pupillary reflexes are all normal.

*Muscle Strength.*—Is normal for a man of his advanced age, and there are no abnormal associated movements.

*Muscle Tone.*—Particularly in the muscles of the arm, is increased. This increase in muscle tone is also quite evident in the muscles of the neck, particularly the trapezius and sternocleidomastoid.

*Electrical Reactions* are normal.

*Sensory Examination* discloses nothing abnormal and all the cranial nerves, including the fundus findings, are negative, excepting in the distribution of the 7th, wherein the muscles of expression are found to lack that mobility which they should have. The face is mask-like and expressionless and smooth.

*Mental Status* shows the changes usually found in advanced cases of senile dementia, namely, there

are grave memory defects, both for recent and remote past and for dates. There is incoherence and confusion, with considerable clouding. The case presents absolutely nothing unusual, and has been recognized for a number of years as an ordinary case of paralysis agitans.

CASE 2. The nephew of this patient is also an inmate of the same ward at the Kings County Hospital and has been for a number of years. W. F., 39 years of age, single.

He began to walk at the age of 3½ years. The explanation given for the retardation of this function by his parents and his physician was that he had a weak back and flabby muscles, but his parents were told that he would grow stronger as he became older. He, however, was never able to walk properly, and until the 16th year he always had to walk on his toes in order to support himself in walking. He was never able to walk with his feet firmly on the ground, for fear of falling, and if he attempted locomotion in this manner he would fall backward; also, not quite so frequently, he fell forward. Aside from the profound retardation in walking, as a child he developed properly, talking at the age of one year, and the teeth appearing when he was six months old. Mentally, his development is said to have been normal in every respect. The first external evidences (hair on the pubes) of puberty appeared at the age of ten, and he is said to have had quite prominent genitals long before this, first noticed when he was five years of age, by his mother. The boy was never very tall for his age and was always considered dwarfish; even as a child it was remarked that he was much smaller than his companions.

The first signs of muscular atrophy appeared symmetrically about the hips and the back, and almost at the same time the lower limbs were noticed to be flabby and weak and atrophic. The muscular atrophy has spread very slowly indeed, and it is only during the past five years that any was evident in the shoulder girdle muscles, which are now, however, quite atrophic. His arms and forearms are also affected; also the muscles of the face and neck, of the trunk and abdomen are involved.

As a child, he is said to have escaped all the children's diseases, and in fact, has been particularly fortunate in being free from any sort of illness excepting the muscular atrophy. He, however, suffered always from childhood from periodical headaches which lasted three or four days each month and attacked the whole of the head. His family was peculiar in this respect, for his mother and his brothers and sisters and one of his uncles and he himself have always been subject to these same paroxysmal headaches in identically the same way, namely, they would last for from three to four days each month without being susceptible of relief.

The patient's mother was married twice and had two sons by her first marriage, and six children—four sons and two daughters—by her second marriage. The patient was the fifth child born from his mother's second marriage. All the children are living, and all of them from both marriages are perfectly well physically and mentally. In fact, all of these descendants have been practically free from any sort of illness, even the usual children's diseases having escaped them. They have suffered from no deformities, no convulsions and no attacks of mental trouble or of nervous trouble. The patient's parents and relatives have been interro-

gated, and it has been possible to trace three generations of the patient's relatives without finding any trace of a similar illness to the patients, in any of the ascendants.

A peculiar feature of this case which should be mentioned is the fact that this patient has never experienced sexual desire, although half a dozen times during his life he has had erections with emissions without masturbation.

The physical examination and neurological examination are absolutely negative in every possible respect excepting in so far as they relate to the x-ray findings and the condition of the muscles. The muscle strength through the body generally is greatly lessened, particularly in the extremities. There is still a very little strength in the muscles of the neck and abdomen and in those of the chest. The muscles of the spine and extremities are very much atrophied and the tone is greatly lessened, there being hardly the semblance of any muscular tissue or power in them.

The electrical reactions show no polar changes, but there is a considerable degree of lessened electrical irritability to both faradism and galvanism, the relative changes at the two poles, however, being normally maintained in the atrophic muscles. There are no sensory changes, and the mental status is normal.

The x-ray of this patient shows a definitely enlarged sella turcica. Dr. Archibald P. Evans, who has made a number of examinations for Dr. Timme, finds that the x-ray plate shows a definite pineal shadow such as has been described by Dr. Timme and others.

The fundi show distinct bitemporal pallor quite definite and undoubted, but there is no hemiopia.

Repeated examinations and testing show a high degree of sugar tolerance.

There are two very interesting points in the family history in both of these cases. In the case of the children of the uncle, it is noteworthy that all of them were very early affected by defective eyesight. The significance of this is not clear. The patient's mother and his brothers and sisters were subject to paroxysmal headaches lasting from three to four days, being periodical in character, occurring once each month. The significance of this fact can only be guessed at. There is a bitemporal pallor in the fundus of this patient to explain the headaches on the grounds of pressure from an enlarged pituitary or pineal gland, most likely pituitary. Whether a suspicion is justifiable in the mother and in the other members of the family suffering from these headaches that either the epiphysis or the hypophysis was responsible for the incidence of the headaches is a question. The patient continues to have these paroxysmal periodical headaches, but the other relatives no longer suffer from them.

The x-ray examination made in the case of the uncle shows nothing. The eye examination in this patient also discloses nothing. Tests for sugar tolerance in the younger patient have been repeatedly made and show a very high degree of sugar tolerance.

It may be perhaps important to draw attention to the fact that pubic hair appeared in the case of the nephew at a rather early age, and that also he is said to have had particularly well-developed genital organs when quite young. This possibly may be an indication of early atrophy of the pineal gland, or at least there is suggested the possibility that there was in this patient a disturbance in function of this gland.

## Book Reviews.

### *Physical Exercise for Invalids and Convalescents.*

By EDWARD H. OCHSNER, B.S., M.D., F.A.C.S.

Illustrated. St. Louis: C. V. Mosby Co. 1917.

This small volume of fifty-four pages is designed by its author to provide a convenient, compact manual of physical exercises for patients who are convalescing from surgical operations, or from severe illnesses and, also, for persons who are engaged in sedentary work and who, for the need of proper physical exercise, lack vigor. He has accordingly arranged, in an easily comprehended form, a series of forty exercises which may be performed without apparatus and in the patient's own room. A simple statement of the importance of exercise, with a few rules regarding their proper performance, form an opening chapter. Each exercise is described clearly and is accompanied by an illustration. It will prove its convenience and usefulness.

### *A Study in Hospital Efficiency as Demonstrated by the Case Report of the First Five Years of a Private Hospital.* By E. A. CODMAN, M.D.

The previously issued reports on the end result system as demonstrated by this author have become well known. The present report is divided into three parts. The first part is called The Case Report and is "a practical illustration of the fact that it is possible to use the end result system in a hospital." Part two is on the financial report and is "an illustration of the money value of a surgeon's services, and the influence of the charitable hospitals on it." Part three is called the new organization and is "an illustration of how a group of earnest men may compete with the cliques who dominate the charitable hospitals in any city." The volume is well worth reading.

## THE BOSTON Medical and Surgical Journal

Established in 1818

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, JANUARY 24, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

## THE GOVERNMENT WAR-RISK INSURANCE.

In place of the pension system which has prevailed in our Army and Navy from time immemorial, the Government has inaugurated an excellent plan of War-Risk Insurance for the benefit of all who see active service in the present war.

The following persons are entitled to apply for this form of insurance:

(1) A commissioned officer (including a warrant officer) in active service in the military or naval forces of the United States.

(2) Any person, male or female, enlisted, enrolled, or drafted into active service in the military or naval forces of the United States, including non-commissioned and petty officers and members of training camps authorized by law.

(3) Any member of the Army Nurse Corps (female) or of the Navy Nurse Corps (female) while employed in active service under the War Department or Navy Department, respectively.

Any of the foregoing persons may take out a Government War-Risk Insurance policy ranging in amount from \$1000 to \$10,000. The premiums are to be paid monthly, and arrangements may be made whereby they may be deducted automatically from the monthly dues to the insured. For example, a person 21 years of age may take out a policy for \$1000, for which sixty-five cents would be deducted from each month's wage. The monthly dues on a policy for \$10,000 would be \$6.50, and intermediate sums in proportion to their amounts. The premiums increase slightly with the age of the insured.

The policy covers partial as well as total disability, and death. The benefits will be paid by the Government in monthly installments to the insured, or to his heirs or beneficiaries. They are not subject to the claims of creditors of the insured or beneficiaries, nor are they assignable. Under certain restrictions, the insured may change the beneficiaries without their consent. In the instances above cited, the monthly payments would amount to \$5.75 and \$57.50, respectively. The policy covers twenty years, and at any time within five years after the close of the war, it may be changed to a life policy without any medical examination.

The army surgeons of the lowest rank, First Lieutenants, receive an annual salary of \$2000; the next in rank, Captain, receives \$2400; and a Major, \$3000. These amounts are increased ten per cent. every five years, up to forty per cent. The age-limit of the physician's enlistment is fifty-five years. These salaries, in conjunction with the possible war-risk insurance, are probably more favorable than the former arrangement. The private soldier is far better provided for than he was under the old régime. The army surgeon receives no allowance by reason of dependents, nor is he compelled to turn over a portion of his salary to them, as is the man in the ranks. It is to be hoped that the army physicians, generally, who enlist, will avail themselves of the benefits of the war-risk insurance.

## PRENATAL CARE AND INFANT MORTALITY.

The Division of Hygiene of the State Department of Health, under its director, Dr. Lyman A. Jones, has instituted a system for the

fostering of pregnancy care, which is part of the general campaign to offset the ravages of war by a stricter and more efficient manner of saving infant life.

This system of pregnancy care consists of a series of letters which may be sent to any prospective mother in the State. The first letter is to be sent during the first month of pregnancy, and is full of sound advice adapted to the needs of the mother at this time. Each following month of pregnancy has its appropriate letter, until the series of nine are sent. For example, the first letter urges the necessity of a care-free and happy atmosphere during pregnancy, and refutes the old belief in the possibility of "marking" babies. The second letter recommends choosing at once a doctor and a nurse, and explains the desirability of being under medical charge from the beginning. The third letter deals principally with diet, the fourth with simple rules of hygiene and advice regarding proper clothing. The fifth letter is devoted to the baby, his clothes and articles necessary for his care. The remaining letters are full of miscellaneous and necessary information. These letters are excellently arranged, and are calculated to appeal by the sympathetic and reassuring manner in which they are written. They will be furnished free to any physician who may wish them, or to any patient whose name is sent by her physician to Dr. Jones. The Department is anxious, in this manner and through the coöperation of doctors throughout the State, to extend its field of service, and in this practical way to prevent the unnecessary loss of infant life to this community through the ignorance and carelessness of mothers.

#### HEALTH LEGISLATION RECOMMENDED BY STATE DEPARTMENT OF HEALTH.

THE State Department of Health has submitted to the Legislature five important bills. The first bill relates to the urgent need of proper supervision of the health of school children. It reads:

"To provide for the appointment of a school physician and school nurse in each city and town, but authorizing cities and towns under conditions to unite in such appointments; such officials to aid in establishing minimum standards in the inspection of school children and

school buildings, under the supervision of the State Departments of Health and Education."

There has never been adequate regulation affecting the isolation of prisoners who are put in jail suffering from communicable diseases.

"Since it is a matter of experience that persons committed to penal institutions are frequently suffering from disease, especially tuberculosis and venereal diseases, often in a communicable stage, a bill, prepared after conference with the Board of Prison Commissioners, requires a medical examination such as the department may prescribe of all individuals committed for a period of thirty days or more. The object of this measure is to ensure that a prisoner suffering from disease shall not endanger fellow inmates by transmitting infection to them during detention and to safeguard against the possibility of the disease being communicated to others after discharge."

The third measure provides for the destruction, after periods of time, of confidential reports on venereal diseases, and the fourth measure prescribes the conditions under which remedies for the treatment of these diseases may be distributed and sold, following to a degree the provisions of present laws relating to the sale of narcotic drugs.

The final measure concerns administrative detail, and aims to provide analysts and chemists of the food and drug division with the same authority as that now held by inspectors in regard to the seizure and destruction of unfit food products.

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#### MASSACHUSETTS MEDICAL SOCIETY DUES.

It will be much appreciated by the officers of the Massachusetts Medical Society if the Fellows will send in their payment of dues promptly. The bills for this year's dues should be in hand, and it is urged that they be met with as much dispatch as possible, as a ready return of remittances will facilitate matters greatly.

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#### MEDICAL NOTES.

LECTURES ON TREATMENT OF INFECTED WOUNDS.—Under the direction of the University and Bellevue Hospital Medical College, New

York, Dr. Edward K. Dunham, Emeritus Professor of Pathology and Major, Medical Reserve Corps, gave a series of five lectures on "Principles Underlying the Treatment of Infected Wounds."

**COMPARISON OF CITY-BRED AND COUNTRY-BRED BOYS.**—General Crowder, in reviewing statistics regarding the physical qualifications of city boys as compared with country boys, states that, although the country boy may be more accustomed to hard physical labor, he is not superior in the possession of the degree of physical soundness essential to his acceptance as a soldier.

"A special comparison made by the Provost Marshal General's office between ten large cities and ten rural counties in various parts of the country, shows that of 35,017 registrants in the selected cities, 9969 were rejected, while out of 44,462 registrants in rural areas, 12,432 were disqualified. The result is virtually a tie, as 28.47% of the city boys were rejected as against 27.96% of the country boys."

**REORGANIZATION OF CINCINNATI HOSPITAL.**—By a new charter just put into effect, all of the medical, scientific and nursing work in the new Cincinnati City Hospital is placed under the direction of the University of Cincinnati. The charter provides that the medical director of each department shall be the professor in the corresponding department of the medical college. The charter removes the hospital entirely from the sphere of politics. The city will continue to pay the general operating expenses of the hospital, such as the heating and lighting, food, engineers, janitors, etc., while the University will pay all the expenses of the medical, surgical, scientific and nursing service.

**BURNING OF HOSPITAL IN OTTAWA.**—The Water Street General Hospital of Ottawa, Canada, was partly destroyed by fire on January 10. All but one of the 158 patients were saved and another patient died from the effects of the shock.

**CONNECTICUT HOSPITAL BURNED.**—A section of the main building of the Connecticut Hospital for the Insane, at Middletown, Conn., was burned on January 10. About 250 patients were in the building, and all were carried to places of safety.

#### WAR NOTES.

**TUBERCULOSIS IN THE UNITED STATES ARMY.**—According to Colonel George M. Bushnell of the Surgeon-General's Department, less than 1% of the 800,000 men examined for the United States Army were found to be tubercular. He stated that measures are being taken to keep infected men from entering the Army by draft and from remaining in the Army after the disease has been discovered.

**STATE OF SOLDIERS' HEALTH AT CAMP DEVENS.**—To refute erroneous rumors which have been sent about regarding the prevalence of pneu-

monia at Camp Devens, the following official figures have been published. Among the 27,000 men in the Camp at the present time, there are but six cases of pneumonia. Since October 1, there have been 44,000 men in the Camp, and of this number twenty deaths have occurred. In the last eight weeks there were but six deaths.

"Since the hospital opened in September, there have been 5010 patients admitted, including all sent for measles, for minor treatments of various sorts and for observation. Orders are that no soldiers shall be kept overnight at the infirmaries in each regiment. All are sent to the base hospital,—a remarkably equipped institution, presided over by physicians and surgeons of high reputation, who left their practice throughout New England, and are commanded by Major Channing Frothingham, formerly of the Peter Bent Brigham Hospital, Boston."

**SURGEON-GENERAL'S REPORT.**—The report of the Surgeon-General of the Army has been issued. It states that the general health conditions of the United States Army, for the calendar year 1916, were in all respects satisfactory, and, in view of the unusual circumstances connected with the mobilization on the border and the expedition into Mexico, may be fairly regarded as specially creditable to those directly associated with the management of all matters pertaining to the health and sanitation, particularly of the troops serving in the Southern Department. The mean strength (corrected for time) of the entire Army, American and native troops, including the National Guard, was 176,803 for the year 1916. Its non-effective rate from all causes in the year was 24.26 per 1000, and for disease alone, 20.55, both of which ratios were slightly lower than for the previous year, 25.22 and 20.85, respectively. The mean strength of the entire Regular Army for 1916, upon which the statistics contained in the annual report are based, was 110,454. The non-effective rate for the entire Regular Army for 1916, from all causes, was 26.99 per 1000, and for disease alone 22.63, being slightly higher than for the previous year, 25.22 and 20.85, respectively, but much lower than the average of these rates for the decade, 34.99 and 29.65, while that for the year 1906 was 47.86 per 1000, from all causes. The death rate of the entire army for 1916, from all causes, was 5.19 per 1000, compared with 4.45 for 1915, which was slightly higher than the lowest mortality rate in the Army for many years, 4.40 for 1914. The death rate from disease was 2.71 per 1000 for 1916, as compared with 2.53 for 1915; the average for the decade was 2.94 and for the year 1906, 3.77.

**COMMISSIONING OF NURSES.**—About one hundred nurses to be attached to the War Emergency Hospital at Commonwealth Armory, will be commissioned by Governor McCall as second

lieutenants. The Women's Council of National Defense will be asked to coöperate in the selection of the nurses. These nurses will be called for duty only in some grave emergency, and then for a limited time only. Governor McCall in sending official notice of his intentions to General Ames stated:

"England and Canada, since the war began, have seen the necessity and desirability of recognizing their nurses and have commissioned those of proper training and experience in service, with the rank and pay of second lieutenants.

"In recognition of the value of such service, and the honor of the profession, I shall be glad to commission, upon the approval of the Military Council, with the rank of nurse and second lieutenant, in the State Guard, such nurses."

**SPECIALIZED EXAMINATION OF RECRUITS.**—For the examination of recruits, which will come under the next draft, two committees have been formed in Boston, made up of specialists in a variety of fields, which will give detailed and expert examinations to all men who appear to require a more thorough examination than that given by the local draft board. These two committees are under the direction of Dr. Henry Jackson, who will have headquarters at the City Hospital, and Dr. Charles L. Scudder, who will have headquarters at the Massachusetts General Hospital. There are more than fifty of such committees throughout the State, and to these committees will be sent all doubtful cases and cases which may appeal to the board for a disputed examination.

"The medical representatives of a local board, for example, may be uncertain whether the sight of a registrant is actually as faulty as he would make it appear, and may have neither time, equipment nor expert knowledge for the more elaborate examination required to make certain.

"In such case of doubt the registrant may be referred to the advisory committee. So, too, it is understood, a registrant dissatisfied with the local examination may seek a supplementary examination from the expert committee.

**WAR RELIEF FUNDS.**—On Jan. 19 the totals of the principal New England war relief funds reached the following amounts:

Halifax Fund.....	\$682,496.86
French Wounded Fund .....	314,670.72
Armenian-Syrian Fund .....	279,627.37
Permanent Blind Fund .....	135,925.24
Italian Fund .....	131,725.18

#### BOSTON AND MASSACHUSETTS.

**AWARD OF HONORS TO HARVARD MEDICAL STUDENTS.**—On January 23, at the Harvard Medical School, there was held a meeting to award honors and present diplomas to students of the first rank in the second, third and fourth classes. President Lowell was present and an address

was delivered by Bishop Lawrence. Dean Bradford presented the diplomas. Following the meeting an informal reception was given by the Students' Association.

**RESOLUTION REGARDING SUGAR CONSERVATION BY MALDEN MEDICAL SOCIETY.**—At a meeting of the Malden Medical Society, held recently, the following resolutions regarding the conservation of sugar were drawn up and were forwarded to Food Administrator Hoover, at Washington, and Mr. Endicott, the food administrator of Massachusetts. The resolutions were as follows:

"The members of this society are witnesses of the distress resulting from the lack of sugar in many homes. Children, invalids and the aged are especially suffering from the lack of this important food. We note the abundance of candy, which is an expensive and often injurious luxury. Immediate action is needed for the relief of present conditions.

"We suggest that a system be instituted which will permit an adequate per capita allowance of sugar weekly, and that no sale of sugar for the manufacture of luxuries be allowed until a liberal and continuous supply for domestic use is assured.

"We are not unmindful of the commercial arguments against this proposal, but we submit that the present hygienic exigency rises immensely above all other considerations."

**BOSTON HOMEOPATHIC MEDICAL SOCIETY.**—At the annual meeting of the Boston Homeopathic Medical Society, held at the Evans Memorial Hospital, the following officers were elected: Dr. Edward P. Ruggles, president; Dr. Mary A. Leavitt, first vice-president; Dr. Clarence Crane, second vice-president; Dr. Clifford D. Harvey, secretary; Dr. Nathan S. Eastman, associate secretary; Dr. T. M. Strong, treasurer; Dr. Ernest C. Jordan, auditor, and Drs. Howard E. Allen, Howard P. Bellows and Charles T. Howard, censors.

**SHELL SHOCK.**—At the meeting of the Boston Society of Psychiatry and Neurology, held at Harvard Medical School on January 8, Dr. Frankwood E. Williams, secretary of the National Committee for Mental Hygiene, presented several reels of films on the subject of "Shell Shock."

**SPRINGFIELD ACADEMY OF MEDICINE.**—At the January meeting of the Springfield Academy of Medicine, held on January 8, Dr. Robert M. Green, of Boston, spoke on "Abdominal Viscer-optosis." The February meeting will be addressed by Dr. W. P. Graves of Boston, the March meeting by Dr. Willard Bartlett of St. Louis, the April meeting by Dr. E. S. Judd of Rochester, Minn.

**HOSPITAL BEQUEST.**—By the will of the late Miss Frances J. Chamberlain of Exeter, N. H., the Exeter Cottage Hospital is the recipient of a gift of \$500.



### Obituary.

#### THEODORE CALDWELL JANEWAY, M.D.

THE sudden and untimely death of Dr. THEODORE CALDWELL JANEWAY, of Baltimore, adds another illustrious name to the list of recent losses at Johns Hopkins University. Dr. Janeway was born in 1872, the son of the late Dr. Edward S. Janeway, of New York City. He was graduated from Yale in 1895, and was at once appointed instructor in bacteriology in Columbia University. He later became professor of medicine in the College of Physicians and Surgeons at Columbia. In 1914 he was elected professor of medicine at Johns Hopkins, succeeding Dr. L. F. Barker. Upon the entry of the United States into the war, Dr. Janeway was appointed a major in the Medical Officers Reserve Corps. He had done a considerable amount of research work for the government. His work on blood pressure is more widely known than any other of his other writings. He is survived by a widow and five children.

### Miscellany.

#### GOITRE IN ALBERTA.

THE following letter which appears in *The Calgary Daily Herald* gives an illuminating account of the prevalence of goitre in this section of Canada:

"An efficient medical health department is supposed to be a constituent part of the government of every subdivision of the British Empire, but in this branch of the organization, Alberta is woefully lacking.

"It is the duty of competent officials in a new country like this, to keep close supervision of all diseases and note any variations arising consequent on surroundings, climate, altitude, etc., etc., and more especially on all diseases liable to have far-reaching effects on the present or future well-being and health of the community.

"By far the most serious disease that is facing the people of the province as yet is goitre, commonly known as thick neck or Derbyshire neck, which has already claimed its victims by thousands, and yet the department refuses to recognize the fact of its presence even when I called its attention to it in the watershed of the Bow river, and offered ocular proof, more than twelve months ago, through our member of parliament, the Hon. C. W. Fisher. Nothing has been, or is being done by the government towards the control or cure of the disease, although I find and have reported that in the village of Cochrane alone 100 per cent. of the British born girls located here before puberty, and in residence since 1910, have contracted the

disease. The surrounding country shows a similar state of affairs, and in Calgary, from the amount of goitrous deformity I can see amongst the young women passing along the streets, I would expect about the same approximate percentage. Medical scientists have not decided whether goitre is caused by lime, germs, microbes of organisms in the water supply, hence they do not know what antidote to apply to the raw water. They have found, however, that whatever it is in the water that causes the disease can be destroyed by heating the water to a temperature of over 160 degrees Fahrenheit. Hence it follows that boiling all water intended for drinking purposes will reduce to a minimum the risk of contracting the disease, whilst also, by cutting off the supply of poison to the system, it will have a tendency to retard, if not to reduce, the growth of the tumor.

"A health ordinance should be promulgated, making it compulsory that all fluid for children's drink should be previously boiled (milk should be heated to over 160 degrees Fahrenheit) and that men and women should use tea, coffee or beer, if they find plain boiled or distilled water unpalatable. Goitre is a disease which, when once acquired and not cured, can be transmitted even to the third and fourth generation of posterity, therefore people with this disease should not be permitted to indulge in parenthood but should have 'birth control' compulsorily forced upon them, otherwise we are apt to find goitre, with its consequent deformity and mental degeneracy, the rule in the next generation of the native born here, and freedom from the disease the exception.

"Females are more quickly susceptible to the disease than males, although it attacks both sexes. People who are not exposed to the infection before maturity take a considerable longer time to contract the disease. Every case of common goitre is a prospective case of exophthalmic goitre with its necessity for operative interference and consequent dangers. I consider that a common goitre has passed the half-way post towards exophthalmic.

"It has frequently happened in the past that chemists in their laboratories have compounded medicinal preparations for the cure of various ailments long before the medical scientists have succeeded in isolating the germ which has caused the disease. In the case of goitre, chemists in the United States claim that they have discovered combinations of remedies which are giving satisfactory results in the treatment of the disease. I find, however, on correspondence, that none of them are prepared to quote a percentage of cures effected, but there is an expression of general willingness on their part to submit their remedies to an official test in order to establish a percentage of cures, and to demonstrate any shortcomings of the remedies which would enable the chemists to make improvements. I attempted, with the aid of the Hon. C. W. Fisher,

to have this investigation undertaken, under government auspices, in the city of Calgary, where there are some thousands of cases with fairly identical surroundings, but was unsuccessful in my application.

• "Delay in the discovery of the cause or of a cure for this disease is daily adding to the number of the victims, as well as to the immensity of the task of handling it.

"So now, again impressing upon your readers the vital necessity of 'boiling all fluids for drinking purposes,' I think we may safely leave the matter in the hands of the ladies to have the necessary legislation adopted, that will not only protect their children, but will protect their own figures from a deformity which is plainly recognizable to anyone who sees them.

T. G. RITCHIE, M.D., L.R.C.S.,  
Edinburgh, 1872.

COCHRANE, Alta., April, 1917."

### THE MANDRAKE IN FOLK-MEDICINE.

THE *London Lancet* for November 17, 1917, gives the following account of the mandrake in folk-medicine:

"The root of the mandrake (*Atropa mandragora*, *M. Officinarum*) is a ready-made amulet, resembling, as it does, the lower limbs of a human being and often a grotesque human body. A naked mannikin may suggest to primitive minds all kinds of thoughts. Hence in Scripture the fruit or root of the mandrake figures as a love-charm (Genesis xxx.), by means of which Rachel is enabled to escape the reproach of barrenness and to become the mother of Joseph. At a later period, as is shown by Professor Sir James G. Frazer in his recently published monograph on 'Jacob and the Mandrakes,' the root, rather than the fruit of the plant, became a sovereign amulet. Solomon, according to 'the Arab Dioscorides,' Ibn Beithar, carried a mandrake in his signet ring, which gave him command over the jinn, or spirits. The plant, Ibn Beithar avers, is a remedy for all maladies caused by jinn, demons, and Satan. It cures lameness, cramp, epilepsy, elephantiasis, madness, loss of memory, besides affording protection against every kind of mishap. The mandrake root was well known as a charm to the ancient Greeks and to Pliny and the Romans, and it reappears in the Middle Ages as the center of a perfect tangle of sinister superstition. As a rule, the plant was held to spring up under the gallows where it was fertilized by the drippings of corpses. In order to obtain it a laborious ritual had to be observed. It was death to dig it up, so its roots were care-

fully loosened, and a dog, preferably black, was tied to it, which, springing after its master or tempted by food, drew the plant out of the ground and died in the act, while the plant shrieked dolefully. The evil genius having left the plant and passing into the dog, the root might be safely handled and used as a valuable ingredient in the pharmacopoeia, where it figured as a promoter of conception and as a cure-all. The Transylvanian gipsies still practise this ritual. In Syria and the East generally the mandrake is still used as a charm, and the making of counterfeit mandrakes, closely resembling hairy ape-like men, is carried on as an industry. Sham mandrakes are often sold for large sums.

"'To make the counterfeit mandrake,' says 'A Thousand Notable Things' (London and Salisbury, 1791), 'which hath been sold by deceivers for much money, do thus as followeth: Take the great double root of Briony, newly taken out of the ground, and with a fine sharp knife frame the shape of a man or a woman ['the womandrake' of our rustics] . . . with his stones and cods, and other members thereto, and when it is clean done, prick all these places with a sharp steel, as the head, the eyebrows, the chin, and privates, and put into the said holes the seeds of millet, or any other that brings forth other small roots, that do resemble hairs (which Leek seed will do very well, or else Barley). After this, put it into the ground, and let it be covered with earth, until it have gotten upon it a certain little skin, and then thou shalt see a monstrous idol, and hairy, which will become the party, if it be workman like, or cunningly made or figured.' The quotation is from Mizaldus. 'Another trim way for the like, is in the *Natural and Artificial* conclusions, englished by Thomas Hill.'

"It is curious to reflect that this quotation from Mizalde was served up to our great grandmothers as lately as 1791. Present-day rustics attach great virtue to the mandrake root, which is eaten as a cure for indigestion. The root is said to taste bitter, but the fruit can be eaten, a little at a time, and the fruit, perhaps, rather than the root, was the ancient mandragora, used as an anaesthetic or narcotic, and known as such to Shakespeare, who, always keenly reflecting the popular beliefs of his age, makes Iago say to his dupe—

'Not poppy, nor mandragora,  
Nor all the drowsy syrups of the world,  
Shall ever medicine thee to that sweet sleep  
Which thou owedst yesterday.'

The literature of the mandrake is enormous. Perhaps one of the best accounts of it was given by Mary Howitt in her poem 'The Mandrake,' which figured in her charming work, 'Birds and Flowers and Other Country Things,' published in 1838."

## WAR COMMITTEE FOR THE UTILIZATION OF HOSPITAL FACILITIES.

A MEETING of the War Service Committee of the American Hospital Association was held in New York City on Wednesday, Nov. 21, 1917. The War Service Committee is a national committee which has been instructed by the American Hospital Association "to inform itself of all military facts and requirements in which hospitals may be concerned, to be in readiness to consult with military authorities in relation thereto, and to assist wherever hospital service may be of value to the country." The committee has established headquarters in Washington, which will be in charge of the secretary, Mr. Richard P. Borden, of Fall River, Mass.

The following statement has been issued by Dr. S. S. Goldwater, acting as chairman:

"From such information as the members of the War Service Committee have thus far been able to gather, the committee infers that it is the policy of the Army to ignore existing hospital facilities in its preparation for the care of invalided men. It would be wiser, in the opinion of the committee, to formulate a program based upon the principle that existing medical institutions, including hospitals and sanatoria, should be utilized wherever and whenever they are capable of rendering the required service. The unnecessary duplication of hospital plant and organization appears to the committee to be deplorable at a time when the nation should husband its resources in order to increase its military and national efficiency.

"The ideas of the War Service Committee on this subject are practically the same as those of the British Ministry of Pensions, which is responsible for the medical treatment of disabled men, who have been discharged from the British Army. In a statement made to the British Hospitals Association on October 19th, 1917, Mr. Horne, representing the Pensions Ministry, said that the Ministry 'had no intention of setting up in various parts of the country institutions, which would compete with established voluntary hospitals. They had in certain instances provided institutions of which there was a dearth, such as those for neurasthenia, tuberculosis, and epilepsy; generally, the accommodation required was provided by enlarging existing institutions.'

"The committee has been unable to learn of any government plan for the care of discharged soldiers who may still require ambulant medical treatment. In this connection, it might be advantageous to consult recent orders of the British Army Council in relation to the handling of two categories of patients: first, soldiers, who at the time of their discharge require further treatment; second, soldiers who at some time after their discharge are found to require further treatment. The instructions in question apply 'to those suitable for treatment as out-patients in hospitals.'

"In order to facilitate coöperation between the Army and civilian hospitals, the committee suggests the organization of an Auxiliary Medical Corps for Home Service. This Corps should be composed of physicians and surgeons who are ineligible for active military duty, and should be made up, in the first instance, of men holding hospital appointments.

"The committee maintains that the efficiency of hospitals and the adequate preparation of recent graduates in medicine for clinical practice, not only among the civilian population, but in the Army, depends in large part upon the maintenance by civilian hospitals of an adequate system of clinical training. In the opinion of the committee, it is inadvisable for hospitals having a graduated intern service of eighteen, twenty-one, or twenty-four months' duration to abandon such service, in order to substitute an ungraded or improperly graded service of only twelve months' duration."

The chairman has been authorized to present the views of the American Hospital Association to the military authorities through the General Medical Board of the Council of National Defense, or otherwise.

## ANTHRAX IN MASSACHUSETTS.

THE bulletin of the State Department of Health for Oct., 1917, gives an account of the prevalence of anthrax in Massachusetts during the current year. Whereas since 1908, the incidence of this disease has not risen above eleven cases per year, in 1916 there were 31 cases and for the first nine months of 1917, there have been 39 cases.

"The demand for leather has compelled the manufacturer to secure hides from new areas in foreign territory, with regard to which our knowledge as to the prevalence of diseases is meager. This increase of anthrax has been coincident with the shipping of hides from these newer sources.

During the first nine months of the present year, 6 of the 39 cases reported have been fatal. There was 1 case of pulmonary anthrax; the remainder were external. The pulmonary case and 34 of the others were infected through the handling of hides, 3 from the handling of hair, and 1 from the handling of wool.

English investigators have reported recently finding cases of anthrax simulating cases of cerebrospinal meningitis, the diagnosis of anthrax not being established until anthrax bacilli had been demonstrated in the spinal fluid.

Since anthrax cannot be accurately diagnosed except through bacteriological findings, smears have been urged in all cases, with the following results:

	Cases.
Smears positive, .....	24
Diagnosis made at autopsy, .....	1
Smears negative, .....	8
No laboratory examination, .....	6
	—
	39

Of the 8 negative smears, 4 were isolated cases, each being the only case in the locality, and each handled hides which were not associated with other cases of the disease. The 4 remaining negative smears, in cases 4, 17, 29 and 35, occurred in association with other cases in fellow workmen who had positive smears, and thus diagnosis was undoubtedly correct.

Of the 6 cases from which no smear was taken, several were associated with positive cases, suggesting that no error was made in the diagnosis. To illustrate: cases 20, 22 and 24 all handled the same lot of hides. A smear from case 24 was positive, also case 6 was a fellow workman with case 16, the latter case being confirmed by a smear.

Thus the diagnosis was confirmed bacteriologically in 25 cases (including 1 where the diagnosis was made at autopsy) and was undoubtedly correct in 7 other cases,—a total of 32 certain cases.

When a stevedore or longshoreman was the first case reported, the manufacturer to whom the hides handled were consigned and the board of health of the town to which the shipment was being forwarded were notified of the probable infection of the hides in question.

For prevention of infection the United States Bureau of Animal Industry recommends that hides be immersed for not less than forty-eight hours in a 1 to 1000 solution of bichloride of mercury, or immersion in a 10 per cent. salt solution containing not less than 2 per cent. hydrochloric acid for forty-eight hours.

For hair disinfection, in a recent report of the Local Government Board (new series, No. 112) it states 'that for steam disinfection to be successful, the cases or bales should be opened, the bundles removed and most of the strings cut, unless the temperature inside the steam disinfecting apparatus is maintained at 230° F. for half an hour.' "

### SHELL SHOCK AMONG TROOPS.

THE situation regarding the prevalence and care of shell shock among troops is admirably summed up by Major Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, in the report of his recent studies in England. He states:

"No medico-military problems of the war are more striking than those growing out of the extraordinary incidence of mental and functional nervous diseases—'shell shock.' Together these

disorders are responsible for not less than one-seventh of all discharges for disability from the British Army, or one-third, if discharges for wounds are excluded. A medical service newly confronted like ours with the task of caring for the sick and wounded of a large army cannot ignore such important causes of invalidism. By their very nature, moreover, these diseases endanger the morale and discipline of troops in a special way and require attention for purely military reasons.

"Although an excessive incidence of mental diseases has been noted in all recent wars, it is only in the present one that functional nervous diseases have constituted a major medico-military problem. As every nation and race engaged is suffering severely from these disorders, it is apparent that new conditions of warfare are chiefly responsible for their prevalence. None of these new conditions is more terrible than the sustained shell fire with high explosives which has characterized most of the fighting. It is not surprising, therefore, that the term 'shell shock' should have come into general use to designate this group of disorders. This terse name is applied to practically any nervous symptoms in soldiers exposed to shell fire that cannot be explained by some obvious physical injury. If all neuroses among soldiers were included in these groups, the use of the term 'shell shock' might be defended. But many hundreds of soldiers who have not been exposed to battle conditions at all, develop symptoms almost identical with those in men whose nervous disorders are attributed to shell fire.

"The non-expeditionary forces supply a considerable proportion of these cases. One of the chief objections to the use of the term 'shell shock' is the implication it conveys of a cause acting instantly. The train of causes which leads to the neurosis that an explosion ushers in is often long and complicated. Apparently in many military cases mental conflicts in the personal life of the soldier, that are not directly connected with military situations, influence the onset of the neuroses. Thus men who have been doing very well in adapting themselves to war develop 'shell shock' immediately after receiving word that their wives have gone away with other men during their absence. With a view to discovering the prevalence of the neuroses and insanity, Sir John Collie, president of the Special Pension Board on Neurasthenics, made an analysis of 10,000 discharge certificates for disability, interpreting the diagnosis given in the light of his very large experience. He found that of these 10,000 consecutive cases, the neuroses constituted 20 per cent.

"If the policy is adopted of caring in France for mental cases likely to recover and evacuating all others to the United States at once or at the expiration of six months' treatment, we may expect to receive at the port of arrival in the United States, not less than 250 insane soldiers

per month, from an expeditionary force of 1,000,000. It should be remembered that if the policy recommended of evacuating to the United States only the patients who fail to recover in six months in France is adopted, some very intractable cases will be received. For the most part these will be patients with a constitutional neuropathic make-up—the type most frequently seen in civil practice.

“Many of these cases will prove amenable to long-continued treatment and much can be expected from the mental effect of return to the United States. It is very important not to fall into the mistake made in England of discharging these severe cases with a pension because of the discouraging result of treatment. To do so will swell the pension list enormously, as can be seen by the fact that fifteen per cent. of all discharges from the British army are unrecovered cases of mental diseases and war neuroses. Quite aside from financial considerations, however, is the injustice of turning adrift thousands of young men who developed their nervous disability through military service and who can find in their home towns none of the facilities required for their cure. It is recommended, therefore, that no soldiers suffering from functional nervous diseases be discharged from the army until at least a year's special treatment has been given.”

### INCREASE IN TUBERCULOSIS.

THE statement cabled from London that Germany is suffering an enormous increase in tuberculosis, mainly as the result of the restricted food supply, calls forth a warning from the Department of Health that, despite a much greater amount of food in this country, a similar disastrous increase in tuberculosis and other diseases may occur here if the public does not take a greater interest in the science of nutrition.

Even in England, where, according to cabled reports, meat and bread are selling for prices lower than those prevailing here, the war has caused a marked increase in tuberculosis. Newsholme, the chief medical officer of the Local Government Board, has just compiled figures showing that in England and Wales the increase in the tuberculosis mortality has amounted to 12% over the figures for 1913. In 1914 the increase amounted to 1582 deaths, to 4621 in 1915, and to 4490 in 1916. Altogether, therefore, in England and Wales alone, the war caused more than 10,000 extra deaths from tuberculosis in three years. Conditions in France are even worse.

In New York City, the Department of Health has on record the names and address of over 35,000 persons suffering from tuberculosis, and of these over 8000 die annually.

A table compiled by Dr. W. H. Guilfoy, the Health Department's registrar of records, shows that the steady downward course of the deaths from tuberculosis has not only been arrested, but that the number this year shows an actual increase over last year's figures. In view of the experiences of the other warring nations, this is certainly disquieting.

Inasmuch as tuberculosis is so intimately associated with under-nourishment, special interest attaches to the report just issued by the Health Department's Bureau of Child Hygiene, concerning the physical examination of school children. According to this report, the number of under-nourished school children in this city is much greater than was heretofore suspected.

According to investigations made by the Health Department's inspectors, one-eighth of all the school children were found to be under-nourished. On the basis of a million school children, this represents the enormous number of 125,000 under-nourished children in the city of New York. One-quarter of this number were so badly under-nourished as to require medical care.

“We have been much concerned,” said Commissioner Emerson, “about the great lack of even elementary knowledge among a large proportion of the people concerning the main facts of food and nutrition. Our studies show that this constitutes a distinct health menace. We have been trying to teach the people by means of posters, leaflets, food exhibits and demonstrations, but progress is slow. This winter we began classes of practical instruction in dietetics at some of our Baby Health Stations. This work is carried on by the nurses of the health stations, for they know the needs of the mothers in their district. In passing, I may add that the new activity emphasizes anew the fact that the Baby Health Stations are essentially educational centers. The increase in the death rate from tuberculosis, while only small, should serve as a warning. I hope it will be heeded.”

### PRINCIPAL CAUSES OF DEATH.

THE Census Bureau issues a statement summarizing mortality statistics for 1916:

“According to a preliminary announcement with reference to mortality in 1916, issued by Director Sam. L. Rogers, of the Bureau of the Census, Department of Commerce, and compiled under the direction of Dr. William H. Davis, chief statistician for vital statistics, the ‘registration area,’ which contained approximately 70% of the population of the entire United States, reported for that year 1,001,921 deaths. Of these deaths, nearly one-third were due to three causes—heart disease, tuberculosis, and pneumonia—and nearly another third were

charged to the following nine causes: Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, influenza, arterial diseases, diabetes, diphtheria, and typhoid fever.

The deaths from heart diseases (organic diseases of the heart and endocarditis) in the registration area in 1916 numbered 114,171, or 159.4 per 100,000 population. The death rate from this cause shows a marked increase as compared with 1900 (the earliest year for which the annual mortality statistics were published), when it was only 123.1 per 100,000. The increase has not been continuous, however, the rate having fluctuated from year to year.

Tuberculosis in its various forms caused 101,396 deaths in 1916, of which 88,666 were due to tuberculosis of the lungs. Because of progress in the prevention and treatment of tuberculosis of all kinds, the decline in the tuberculosis death rate in recent years has been most pronounced, having fallen from 200.7 per 100,000 in 1904 to 141.6 in 1916, a decrease of nearly 30%. Before 1904 the rate had fluctuated, starting at 201.9 in 1900. Even yet, however, tuberculosis causes more deaths annually than any other malady, except heart diseases, and about 37% more than all external causes—accidents, homicides, and suicides—combined.

Pneumonia (including bronchopneumonia) was responsible for 98,334 deaths in the registration area in 1916, or 137.3 per 100,000. This rate, although lower than that for any year from 1900 to 1910, inclusive, with the single exception of 1908, is higher than that for any of the years from 1911 to 1915, inclusive. The lowest recorded rate for all forms of pneumonia was 127 per 100,000 in 1914. The mortality from this disease, like that from tuberculosis, has shown a marked decline since 1900, when it was 180.5 per 100,000. Its fluctuations from year to year, however, have been pronounced, whereas the decline in the rate for tuberculosis has been nearly continuous.

The only remaining death rate higher than 100 per 100,000 in 1916 was that for Bright's disease and acute nephritis, 105.2. The total number of deaths due to these maladies in 1916 was 75,316; of this number, 69,395 were caused by Bright's disease and 5921 by acute nephritis. The mortality rate from these two causes has increased from 89 per 100,000 in 1900, with some fluctuations from year to year.

Cancer and other malignant tumors caused 58,600 deaths in 1916. Of these, 22,480, or nearly 39%, resulted from cancers of the stomach and liver. The death rate from cancer has risen from 63 per 100,000 in 1900 to 81.8 in 1916. The increase has been almost continuous, there having been but two years—1906 and 1911—which showed a decline as compared with the year immediately preceding. It is possible that at least a part of this increase is due to more correct diagnoses and to greater care on

the part of physicians in making reports to registration officials.

Apoplexy was the cause of 58,233 deaths, or 81.3 per 100,000. The rate from this disease increased gradually, with occasional slight declines, from 1900 to 1912, and since 1913 the increase has been continuous.

Diarrhea and enteritis caused 56,763 deaths in 1916, or 79.3 per 100,000. The rate from these diseases has fallen somewhat in recent years, having been 90.2 in 1913, and is very much lower than the corresponding rate for 1900, which was 133.2. Nearly five-sixths of the total number of deaths charged to these causes in 1916 were of infants under 2 years of age.

Influenza was responsible for no fewer than 18,886 deaths in the registration area in 1916, or 26.4 per 100,000. The rate from this malady, which fluctuates very considerably from year to year, was higher in 1916 than in any preceding year since and including 1900, with the single exception of 1901, when it stood at 32.2.

Arterial diseases of various kinds—atheroma, aneurism, etc.—were the cause of 17,115 deaths in 1916, or 23.9 per 100,000. This rate, although somewhat lower than the corresponding ones for 1912 and 1913, is higher than those for 1914 and 1915. The rate for these causes increased continuously from 6.1 in 1900 to 25.6 in 1912.

Deaths from diabetes numbered 12,199, or 17 per 100,000. The rate from this disease has risen almost continuously from year to year since 1900, when it was 9.7.

No epidemic disease, with the exception of influenza, produced a death rate as high as even 15 per 100,000 in 1916. The fatal cases of diphtheria and croup—which are classed together in the statistics, but practically all of which are cases of diphtheria—numbered 10,367, or 14.5 per 100,000 population. The rate for diphtheria and croup in 1900 was 43.3, and the decline of nearly 67% from that year to 1916 is relatively greater than that shown by any other important cause of death. The rate fluctuated somewhat from 1900 to 1913, but has fallen continuously since the latter year.

The mortality rate from typhoid fever has shown a most remarkable and highly gratifying decline since 1900, having dropped from 35.9 per 100,000 in that year to 13.3 in 1916. The proportional decrease in the rate, amounting to 63%, is a close second to that shown for diphtheria and croup. The efficacy of the anti-typhoid vaccine and of the many improvements in methods of sanitation has been demonstrated in a striking manner by this great reduction in the typhoid death rate.

*Measles, Whooping Cough, and Scarlet Fever.*—The principal epidemic maladies of childhood—measles, whooping cough, and scarlet fever—were together responsible for 17,586 deaths of both adults and children, or 24.6 per



100,000, in the registration area in 1916, the rates for the three diseases separately being 11.1, 10.2, and 3.3. As in 1913, measles caused a higher mortality than either of the other diseases, but in 1914 and 1915 whooping cough had first place. In every year since and including 1910, as well as in several preceding years, measles has caused a greater number of deaths than scarlet fever. The rate for scarlet fever in 1916 was the lowest on record, while that for whooping cough, although considerably below the highest recorded rate for that disease—15.8 in 1903—was far above the lowest—6.5 in 1904.

*Acute Poliomyelitis.*—Acute anterior poliomyelitis, commonly called infantile paralysis, caused 7130 deaths in 1916, representing a rate of 10 per 100,000 population. This disease developed in epidemic form in that year, and the resultant mortality showed an enormous increase. The rate from infantile paralysis declined from 2.7 per 100,000 in 1910—the first year in which this malady was reported separately as a cause of death—to 1 per 100,000 in 1915, the decrease having been continuous from year to year, except for an increase between 1911 and 1912. The rate for 1916, however, was ten times as great as that for the preceding year.

Of the 26 states in the registration area in 1916, the 5 showing the highest rates reported 75% of all the deaths from this cause. These states, with their rates, were New Jersey, 41; New York, 32.8; Connecticut, 19.2; Massachusetts, 12.5; and Maryland, 8.1. The next highest 5 rates appear for Pennsylvania, 7.8; Rhode Island, 7; New Hampshire, 5.6; Montana, 5.2; and Michigan, 4.9.

*Accidents and Injuries.*—The deaths resulting from accidents in 1916 numbered 60,071, corresponding to a rate of 83.9 per 100,000 population. This rate is considerably in excess of that for 1915 (76.3). The most marked increases appear for deaths due to railroad and to automobile accidents, and for those resulting from the effects of heat.

The rate for deaths from railroad accidents in 1916 (11.3) exceeds the corresponding rates for 1914 and 1915 (10.7 and 9.9, respectively), but, with these exceptions, is the lowest one recorded since 1906, the first year for which deaths from this cause were reported separately.

Deaths from automobile accidents and injuries in 1916 totaled 5193, or 7.3 per 100,000 population. As might be expected, in view of the enormous increase in the number of automobiles in use, the death rate due to these causes has advanced continuously since 1906—the first year for which they were reported separately—when it stood at 0.4 per 100,000 population.

Deaths resulting from street-car accidents in 1916 numbered 1775, or 2.5 per 100,000. This rate is the same as that for 1914, but shows an increase as compared with 1915. During the past 10 years, however, there has been a material falling off in the rate for this cause.

Machinery accidents caused 1624 deaths in 1916, or 2.3 per 100,000 population, this rate being somewhat greater than those for the preceding two years—1.9 for 1915 and 2 for 1914.

The number of deaths from mine accidents and injuries in the registration area in 1916 was 2119, corresponding to a rate of 3 per 100,000. The deaths from these accidents for the last three years show a material decline as compared with those for the preceding 10 years.

There were 2056 deaths in 1916 from the effects of heat, the rate being 2.9 per 100,000 population. This is the highest rate shown for this cause in the last 15 years, with the exception of that for 1911, which was 5.3.

*Suicide.*—The number of suicides reported for 1916 was 10,162, or 14.2 per 100,000. This rate is the lowest for the past 10 years.

*Deaths Caused by Firearms.*—The total number of deaths due to the use of firearms in the registration area in 1916 was 8240, corresponding to a rate of 11.5 per 100,000. Of these deaths, 3386 were suicidal, 3241 were homicidal, and 1613 were accidental. The suicidal use of firearms shows a decline as compared with 1915 and 1914; their homicidal use decreased as compared with 1914, but increased as compared with 1910, 1911, 1912, and 1915, and the rate was the same as for 1913; and the frequency of accidental deaths due to their use shows a slight decline during recent years."

## THE FIRST SEMI-ANNUAL REPORT OF THE WAR COUNCIL OF THE AMERICAN RED CROSS.

ON behalf of the War Council of the American Red Cross, appointed by President Wilson, May 10, Henry P. Davison, chairman, has made public the report to the American people on the present state of the War Fund and the work which is being done by the American Red Cross in this country and different parts of the world. The report, in part, is as follows:

### "To the American People:

The Red Cross War Council herewith reports on the work of the Red Cross during the almost six months which have elapsed since its appointment by the President.

Included herein are details as to collections on account of the War Fund and appropriations made from the fund, up to November 1, 1917.

The growth of Red Cross activities among the suffering civilian populations in the different allied countries is, up to this time, the outstanding feature of Red Cross work in this war. The magnitude of the work in France is particularly impressive.

Broadly speaking, the Red Cross War Council has proceeded upon the theory that the present work of the American Red Cross should contribute to these great aims:



1. To be ready to care for our soldiers and sailors on duty wherever and whenever that care may be needed.

2. To shorten the war—by strengthening the morale of the allied peoples and their armies, by alleviating their sufferings in the period which must elapse until the American army can become fully effective abroad.

3. To lay foundations for an enduring peace—by extending a message of practical relief and sympathy to the civilian population among our Allies, carrying to them the expression of the finest side of the American character.

The American people have generously supported the work of the Red Cross, and this report of activity is given with great fullness in the hope that through it the public may realize both the obligation and the opportunity which the future presents.

The American Red Cross is attempting to respond to the most beseeching and far-reaching appeal ever made for mercy and relief.

The American people are today the richest people in the world, the richest in resources, richest in obligations and in opportunities. The Red Cross aims to mobilize the hearts and souls of America toward binding up the wounds of a bleeding world.

Up to date, approximately \$88,000,000 in cash has been collected for the War Fund. The demands, however, in Europe, are increasing with great rapidity, and on the present basis of expenditure the \$100,000,000 War Fund cannot last much beyond spring.

Following the preliminary report recently made on the work in Europe of the American Red Cross, the War Council presents herewith a summary of the work of the Red Cross, both in the United States and in Europe, from May 10, 1917, to November 1, 1917.

During this period the War Council appropriated from the War Fund (including \$7,659,000 advanced to chapters for purchase of material and to be returned to the War Fund), \$10,969,216.60 for work in the United States, as contrasted with the appropriation of \$27,885,816.86 for work abroad, of which \$20,601,240.47 was for use in France.

There have been appropriated from funds restricted to specific purposes, \$1,417,625.74. As \$7,659,000 advanced by the War Council is to be returned to the War Fund, the net appropriations amount to \$32,613,659.20.

The total expenses of raising and collecting the War Fund are proving to be less than one per cent. The War Fund is deposited locally by the chapters and campaign committees. About 3500 banks now hold these deposits, in the name of William G. McAdoo, Treasurer.

Forty-nine Army base hospital units and five for the Navy have been recruited, organized and equipped by the Red Cross. More than twelve of the Army units and two of the Navy units have now been mustered into their respective Medical Corps and are seeing service. These

units can care for a 500-bed hospital each, and some of them have been reinforced to enable them to take over larger hospitals.

The Red Cross has also organized 45 ambulance companies, with a total personnel of 5580, all of which have been taken into the Army Medical Corps, some for service abroad, others for the camps and cantonments. A General Hospital, for the use of the Navy, has been established at Philadelphia. Convalescent homes have been built at Fort Oglethorpe and Fort McPherson, Georgia, and mobile laboratory cars are to be provided for use in case of emergencies at the camps.

Through its Sanitary Service, the Red Cross is coöperating with local health authorities in maintaining the best possible sanitary conditions in the zone just outside military jurisdiction at the training camps and cantonments. Twenty sanitary units have been organized for this purpose.

The Red Cross has placed field directors of Camp Service at thirty-eight camps, cantonments and naval stations. The purpose of the Camp Service is to coöperate with all the agencies that are advancing the welfare of the enlisted men.

The Red Cross has continued its work of disaster relief during the war, and has rendered aid in 64 calamities. Recently a call for help for flood victims in Tien-tsin was answered by the dispatch of a relief expert to the city and the sending of \$125,000.

Fourteen thousand Red Cross nurses have been enrolled for duty, and approximately 3000 have already been called into active nursing service, of whom 2000 are working abroad.

A program for increasing the reserve of fully trained nurses for war service has been adopted, in concert with the Committee on Nursing of the Council of National Defense and other nursing authorities.

Millions of women have been mobilized for work on surgical dressings, hospital garments, refugee clothing, knitting garments, and comfort kits. It is estimated that the value of their work during the next twelve months will amount to nearly \$40,000,000.

Since April 1, 1917, the Red Cross has sent abroad 13,336 cases of surgical dressings, hospital supplies and clothing, containing approximately 13,000,000 separate articles. The Red Cross has promised to send 3,000,000 surgical dressings to France every month for the next six months.

Courses of instruction in elementary hygiene and home care of the sick, home dietetics, and first aid have been given throughout the United States. More than 34,000 women have completed the first of these courses, and 75,000 certificates of proficiency in first aid have been issued during the past year alone.

This work in the United States has been directed from National Headquarters by a completely reorganized administration. Under the

direction of the War Council, a general manager, Harvey D. Gibson, president of the Liberty National Bank, has been given general charge of the work in this country. He has delegated the direct oversight of the chapters, of which there are now 3287, to division managers.

At National Headquarters in Washington a staff has been built up which included, on November 1, 1917, sixty-three officials, most of them business men and women of great experience in large affairs, who are working without payment of either salary or living expenses.

Numerous others are either giving their time or are working for nominal pay. The membership has grown, since the war, from about 200,000 to more than 5,000,000. The salary list has been reduced since last July from about 700 to about 425. Salaries have decreased also in average amount. Had the Red Cross been obliged to pay salaries to all the heads of departments at National Headquarters, the present organization would have been impossible.

A new class of members, the Junior Red Cross, has been created for school children, who are admitted by school units, to a share in Red Cross membership and relief work upon payment of a membership fee of twenty-five cents per pupil.

The direct appropriations from the War Fund for work in the United States are divided as follows:

Hospitals, etc .....	\$503,500.00
Sanitary Service .....	184,500.00
Camp service, etc. ....	2,528,729.00
Miscellaneous .....	93,487.60
	<hr/>
	\$3,310,216.60

The work of the Red Cross in Europe centers necessarily in France, and Major Grayson M.-P. Murphy, a member of the War Council, is head of the Commission to France and Commissioner for Europe. Headquarters are in Paris, in a building furnished free for the current year for the use of the Red Cross. The working staff in France numbers 864 persons, of whom only 347 are paid by the Red Cross. The others are volunteers, or are paid by their former employers or from funds privately subscribed, so that the average cost to the Red Cross is only about \$300 per year for each worker.

The principal purposes of the work of the American Red Cross abroad may be summarized thus:

1. To do everything possible to assist our Army and Navy in insuring the health and comfort of American soldiers and sailors abroad, and
2. To relieve suffering among the armies and destitution among the civilian populations among our Allies.

The establishment and maintenance in France of canteens, rest houses, recreation huts, and

other means of supplying comforts in the armies of our Allies have been the means of heartening them and keeping their men in the field until our men could become fully effective.

The details which follow here are supplemental to those given in the report issued in September:

Work for the American Army is the first and most important part of the Red Cross program in France. More than twelve base hospitals organized by the Red Cross and now mustered into the Army Medical Corps, are in service in France. The Red Cross is also administering, under Army control, the hospital at Neuilly formerly known as the American Ambulance, together with Dr. Joseph A. Blake's hospital in Paris.

The Red Cross is serving 3423 military hospitals, both French and American, through the Hospital Supply Service, which operates sixteen warehouses and a motor transport system. Approximately 15,000 tons of material—hospital and general relief supplies—are distributed monthly from these warehouses. The Surgical Dressings Service reaches 2000 hospitals. American workshops in France will manufacture nitrous oxide, repair hospital apparatus, make splints and hospital appliances.

An appropriation of \$100,000 has been made to enable the American doctors now in France to procure suitable buildings. Special laboratory equipment and animals for experimental purposes, for special military medical research work looking toward the recognition and study of diseases among soldiers, the eradication of lice, fleas and scabies, the treatment of trench nephritis, trench heart, war neurasthenia, exhaustion, lethal gases, shell concussion, wound infection, compound fractures, etc. The recommendation for this, like all others of a medical nature, was submitted to an advisory medical board composed of leading American doctors working with our own forces. They approved it.

The question has been raised as to whether the appropriation for medical research was not outside the proper scope of Red Cross activity. The answer is simple. The supreme aim of the Red Cross is to relieve human suffering growing out of the war. The Red Cross was advised from the ablest professional sources that an immediate appropriation for medical research would contribute toward that end. The War Council could not disregard such advice.

All recommendations to the Red Cross War Council of medical, surgical or hospital character are, before being made by the Commission to France, submitted to the advisory medical board in France, and they are also laid before the medical advisory board in this country by the War Council. It thus has at its disposal in these vital matters the most expert advice obtainable.

All expenditures under this appropriation must first have the recommendation of the chief medical officer of the American expeditionary force, Brig.-Gen. A. E. Bradley.

Relief of refugees throughout the devastated zone has been undertaken by the Red Cross. Relief warehouses have been placed at strategic points behind the lines, from which food, clothing, household goods, agricultural implements and tools are being distributed to the returning refugees. Foodstuffs to the value of \$2,870,300 have already been bought in France or shipped there for military and civilian relief.

In good agricultural districts the Red Cross is coöperating with the French government and with American and English friends in assisting the population of ruined villages to begin repair of houses, etc.

At Evian, where French refugees, mostly women and children, who have been held prisoners behind the German lines, are returned to France, the Red Cross has provided motor ambulances for the transportation of the sick and feeble and has opened children's hospitals. Hundreds arrive there almost daily—destitute and sick.

Special work has been begun for mothers, infants and children. The Red Cross has sent three detachments of children's specialists to care for babies and expectant mothers, in the hope of checking the increase in infant mortality.

At two centers the Red Cross is caring for orphans and children from bombarded villages. A large refuge has been opened at one, at which sick and neglected children are being given expert medical care. From the other a travelling dispensary and shower bath is being sent out daily to make the rounds of the nearby villages.

Included in appropriations for France are the following:

Budget for military relief, including work for the American Army, hospitals, canteens, hospital supply service, surgical dressings service, casualty service, etc., to November 1, \$2,411,225; budget for civilian relief, including refugee and reconstruction work, relief of mutilated soldiers, infant welfare, tuberculosis prevention, etc., to November 1, \$2,460,467; budget for Department of Administration in Paris and Planning Department, to November 1, \$119,590; additional appropriations, for hospitals, etc., \$1,407,578.25; additional appropriations for transportation service, \$1,423,598.90; other appropriations, \$12,778,780.85.

In addition to the Commission to France, commissions were sent to investigate conditions and extend immediate relief in Russia, Roumania, Serbia and Italy. The Russian Commission has completed its survey, and some of its members have returned to the United States, leaving an operating organization in Petrograd.

The Italian Commission has also returned to the United States, and an operating commission is to be sent to Italy as quickly as possible.

The Commission to Italy used an appropriation of \$200,000 for immediate relief in that country. The Red Cross acted promptly when the Italians were forced to retreat, pledging its aid through Ambassador Page and placing a special relief fund of \$250,000 at its disposal. This was later raised to \$750,000.

Commissions are at work in Roumania and Serbia. A commission and deputy commission have been assigned to England, and a special department has been set up for Belgium.

In Belgium the work of the Red Cross, which is confined to the part of the country still held by the Allies, is chiefly in coöperation with the relief interests of the King and Queen. The Red Cross is assisting Belgian hospitals and children's refugees, aiding Belgian villagers to re-establish themselves in the devastated zone left by the retreating Germans, and helping to care for Belgian children, both in Belgium and in France and Switzerland.

The work of the Red Cross in Russia centers on the medical and surgical needs of the army. Several shipments of drugs and hospital supplies have been made, and a unit of 125 motor ambulances has been sent to Russia. The Red Cross has shipped two million pounds of condensed milk for the use of mothers and children in the large cities.

The total appropriations (cents omitted), for the work outside of France up to November 1, are as follows:

For Belgium .....	\$720,001
For England .....	1,066,520
*For Italy .....	214,000
For Russia .....	1,359,440
For Roumania .....	1,518,398
For Serbia .....	493,203
For Armenians and Syrians .....	1,800,000
Other appropriations .....	113,012
Total .....	\$7,284,574

\* Later the War Council appropriated \$750,000 for emergency relief in Italy.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Jan. 12, 1918, the number of deaths reported was 314, against 270 last year, with a rate of 20.87 against 18.23 last year. There were 48 deaths under one year of age, against 37 last year.

The number of cases of principal reportable diseases were: diphtheria, 85; scarlet fever, 39; measles, 124; whooping cough, 60; tuberculosis, 36.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 3; tuberculosis, 4.

Total deaths from these diseases were: diphtheria, 9; scarlet fever, 2; measles, 2; whooping cough, 3; typhoid fever, 1; tuberculosis, 21.

Included in the above were the following non-residents: diphtheria, 3; scarlet fever, 1; measles, 1; typhoid fever, 1; tuberculosis, 19.

## Correspondence.

## NAVY'S CALL FOR BINOCULARS, SPY-GLASSES AND TELESCOPES—"THE EYES OF THE NAVY."

Navy Department, Assistant Secretary's Office,  
Washington, January 7, 1918.

Mr. Editor:—

The Navy is still in urgent need of binoculars, spy-glasses and telescopes. The use of the submarine has so changed naval warfare that more "eyes" are needed on every ship, in order that a constant and efficient lookout may be maintained. Sextants and chronometers are also urgently required.

Heretofore, the United States has been obliged to rely almost entirely upon foreign countries for its supply of such articles. These channels of supply are now closed, and, as no stock is on hand in this country to meet the present emergency, it has become necessary to appeal to the patriotism of private owners to furnish "eyes for the navy."

Several weeks ago, an appeal was made through the daily press, resulting in the receipt of over 3000 glasses of various kinds, the great majority of which has proven satisfactory for naval use. *This number, however, is wholly insufficient, and the Navy needs many thousands more.*

May I, therefore, ask your coöperation with the Navy, to impress upon your subscribers, either editorially, pictorially or in display, by announcing, in addition to the above general statement, the following salient features in connection with the Navy's call:

All articles should be securely tagged, giving the name and address of the donor, and forwarded by mail or express to the Honorable Franklin D. Roosevelt, Assistant Secretary of the Navy, care of Naval Observatory, Washington, D. C., so that they may be acknowledged by him.

Articles not suitable for naval use will be returned to the sender. Those accepted will be keyed, so that the name and address of the donor will be permanently recorded at the Navy Department, and every effort will be made to return them, with added historic interest, at the termination of the war. It is, of course, impossible to guarantee them against damage or loss.

As the Government cannot, under the law, accept services or material without making some payment therefor, one dollar will be paid for each article accepted, which sum will constitute the rental price, or, in the event of loss, the purchase price, of such article.

Toward the end of January it is proposed to distribute throughout the country, posters making an appeal to fill this want of the Navy.

As this is a matter which depends entirely for its success upon publicity, I very much hope that you will feel inclined to help the Navy at this time by assisting in any way that lies within your power.

Very sincerely yours,

FRANKLIN D. ROOSEVELT,  
Assistant Secretary of the Navy.

DOCTORS AND THE MEDICAL RESERVE CORPS.  
Lowell, Mass, January 4, 1918.

Mr. Editor:—

In reading your editorial on "Every Doctor in the Medical Reserve Corps," in the January 3 issue of the JOURNAL, I agree with you that it would be an ideal condition, but difficult to attain because there are two sides to the question and perhaps my own case will illustrate the other side, and has been used against myself when I have tried to persuade eligible men to join the Corps.

I was commissioned a first lieutenant, June 5, 1917, and am still at home, since which date I have been in suspense, not knowing when I would be called. In July the lease of my office expired and, not caring to

renew it at advanced rates for three years (which I would have done if not in the Corps), I was forced to move. I have lost considerable business through people assuming I had gone away and others not caring to engage me for future work, not knowing if I should be here when wanted.

It has been annoying, to say the least, and a number of men I have spoken to do not care to suffer this suspense and annoyance at this time, but would join if the Government would state definitely when they were wanted.

Now, I am not complaining or finding fault. I have simply done my duty as I saw it, my Bit and Best, and I ought to know something about the game of war and the duties of a good soldier, having started the study of military tactics about 25 years ago in high school, served in the Spanish-American War and later in the State Militia. If called tomorrow, I go; and if never called, am content, but I have to admit that it is disconcerting not to know where I may be two weeks hence, and my medical friends that have not learned discipline refuse to join under present conditions.

Yours truly,

CLARENCE B. LIVINGSTON.

## SOCIETY NOTICES.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at the Roxbury Masonic Temple, 171 Warren St., January 29, at 8.00 P.M. sharp. Phone Roxbury 22753.

Business.

Communication: "Cancer," John T. Bottomley, M.D.  
Collation. BRADFORD KENT, M.D., Secretary.

798 Blue Hill Ave., Dorchester.

NEW ENGLAND PEDIATRIC SOCIETY.—A meeting of the New England Pediatric Society will be held at the Boston Medical Library on Feb. 1, 1918, at 8.15 P.M. The following papers will be read:

1. President's Address, Charles Hunter Dunn, M.D., Boston.
2. Clinical Spasmophilia, William W. Howell, M.D., Boston.
3. Experimental Studies on Growth after Feeding Certain Ductless Glands, Warren R. Slisson, M.D., Boston.

Light refreshments will be served after the meeting.

CHARLES HUNTER DUNN, M.D., President,  
RICHARD M. SMITH, M.D., Secretary.

GENERAL MEETING OF THE BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.—Owing to the military duties of Dr. Taylor of Washington, D. C., he was unable to come to Boston on January 16, 1918, and the meeting arranged for that date was therefore postponed.

W. B. ROBBINS, M.D.

## NOTICE.

BOSTON MEDICAL LIBRARY.—In view of the serious coal situation now existing in New England, and to conform to the recommendations of the Fuel Administrator dated Jan. 9, 1918, the library hours will be as follows until further notice:

Open daily except Monday, Sunday and Holidays.  
9.30 A.M. to 5 P.M.

Closed all day Monday. Closed evenings.

January 14, 1918. WALTER L. BURRAGE, Secretary.

## RECENT DEATHS.

DR. THOMAS D. CROTHERS of Hartford, Conn., died on January 13. He was born in New York in 1842. Since 1875 he had been secretary of the Association for the Study and Care of Inebriates, and he was also editor of *The Journal of Inebriety*. In 1900 he was made professor of nervous diseases by the New York Medical School. He was also dean of the College of Physicians and Surgeons of Boston.

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Session 1918-1919. Candidates are required to present evidence of the completion of two years of collegiate work toward a Bachelor's Degree in a college recognized by the New York State Department of Education. This two years of college work must include at least one year of college work in Chemistry, Physics, Biology, English and either French or German.

For Bulletin or further information address DR. JOHN HENRY WYCKOFF, *Secretary*, 26TH STREET AND FIRST AVENUE, NEW YORK CITY.

## MEDICAL DEPARTMENT

Session 1917-1918 begins Wednesday, September 26, 1917

### PREMEDICAL COURSE.

To meet the requirements for admission to the medical school, the College Department of New York University offers the following Medical Preparatory Courses: (1) September, 1917-June, 1918, one year; September, 1918-June, 1919, one year; (2) February, 1918-September, 1918, one year; September, 1918-June, 1919, one year. For information regarding the Medical Preparatory Course address DR. MARSHALL S. BROWN, School of Arts and Science, University Heights, New York.

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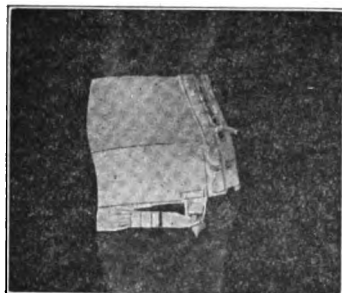
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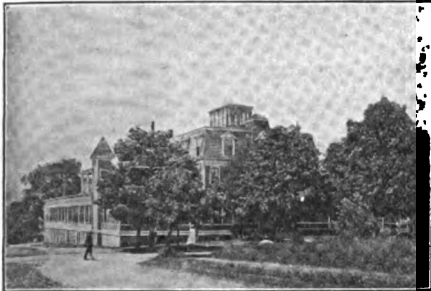
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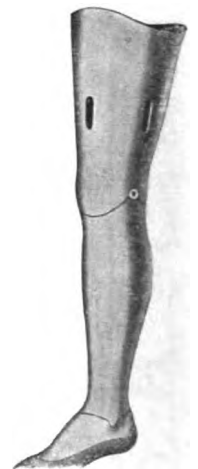
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## CONTENTS

### ORIGINAL ARTICLES

MENTAL CONDITIONS DISQUALIFYING FOR MILITARY SERVICE.

*By Major L. Vernon Briggs, M.R.C., U. S. Army.*

VAGINAL DISCHARGE IN CHILDREN; STUDY OF 255 SELECTED CASES, WITH SPECIAL REFERENCE TO THE QUESTION OF THE DIAGNOSTIC AND SPECIFIC VALUE OF SMEAR EXAMINATIONS.

*By I. C. Rubin, M.D., F.A.C.S., New York.*

THE PRIMARY LESION OF TUBERCULOSIS: ITS SIGNIFICANCE, DIAGNOSIS AND TREATMENT.

*By William W. Howell, M.D., Boston.*

LIPIDS IN 131 DIABETIC BLOODS. *By Horace Gray, M.D., Boston.*

### MEDICAL PROGRESS

PROGRESS IN PEDIATRICS. A RÉSUMÉ OF THE LITERATURE OF INFANTILE SCURVY DURING THE PAST FIVE YEARS. *By John Lovett Morse, M.D., Boston.*

### EDITORIALS

MILITARY ANTI-TUBERCULOSIS PROGRAM PERFECTED.

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For complete table of contents, see first text page.

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### MILITARY SURGERY.

#### GUNSHOT WOUNDS OF THE CHEST

ANDERSON, ROBERTS, CRAIG, GRAY, COWELL, AND HATHAWAY (*British Medical Journal*, Nov. 3, 1917) in five articles discuss the general subject of severe penetrating wounds in the chest.

Anderson emphasizes the need of an x-ray examination and gives the details of operative procedure especially as to his results with the use of brilliant green. He presents six illustrative cases.

Roberts and Craig discuss the subject more in detail. The two essential principles on which treatment is based are:

1. Complete removal of all sources of sepsis.
2. Conservation of the function of the joint if this is compatible with (1).

They divide up perforating wounds of the chest into four classes.

1. Open wounds with free air entry.
2. Closed wounds with septic laceration.
3. Closed wounds with early signs of infection of the hemothorax.
4. Closed wounds with no evidence of intra-pleural infection.

They discuss physical signs in the chest, caused by such wounds, the preliminary treatment of the patient, indications for operation and the nature of the operation itself. The operation is especially indicated when the lung is adherent to the chest wall; when the lung is not adherent operation is especially difficult. They recommend the use of local anesthesia.

Of the 199 cases, 103 were not operative; 24 died without operation, leaving 67 on whom operations were performed. Of these 67 cases 33 died and 34 eventually recovered.

Gray, discussing these cases and the operations, emphasizes the fact that operation is undertaken with two great objects in view—(a) to prevent sepsis from getting a hold, and (b) to tide the patient over a dangerous period.

Cowell, discussing plastic transcostal thoracotomy, states that this method is simple and quick, provides perfect access to the chest contents, and, moreover, ensures a rapid, perfect closure. It was originally with the idea of saving time that this operation was thought out. One of the lessons of war surgery is that not only the recovery of the individual but the welfare of many patients often depends to a great extent on the speed at which the surgeons work. Also, the operation which gives as an end result the closest approximation to the original normal anatomical condition, without risk or other disadvantage to the patient, is always the ideal at which one should aim.

Hathaway, discussing the early operative treatment of penetrating gunshot wounds of the chest, concludes that:

(Continued on page vi.)

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(Continued from page iv.)

The ideal methods of modern surgery are (1) early operation, (2) complete excision of wound and damaged tissues, (3) removal of metal fragment and clothing, (4) mechanical cleansing of wound (the use of strong antiseptics to be avoided), (5) complete suture of wound. Provided that one can get *early and complete* operation, there is far more danger from secondary than from primary infection.

The treatment of wounds of the chest, therefore, follows the same lines as those of the abdomen, head, knee, or other joints; they require just as early operation, and it will be found that the results are just as good. [J. B. H.]

#### THE LATER HISTORY OF CASES OF GUNSHOT WOUNDS OF THE CHEST WITH RETAINED MISSILES.

RUDOLF (*The Lancet*, Nov. 10, 1917) has followed up the later history of 50 cases of gunshot wounds of the chest which he summarizes. He concludes that:

1. Evidence is lacking that small fragments of shell and shrapnel and likewise rifle balls retained in the lung commonly give rise to any serious trouble.

2. The mortality of gunshot wounds of the chest in patients that have survived the early days of their invalidism and been sent to England with retained missiles in the chest is practically nil if these foreign bodies be left alone.

3. Hence, when it has not been considered necessary by the surgeons at the front to operate immediately, it should not later on be done, unless, indeed, some very definite indication, such as an abscess, exists. [J. B. H.]

#### THE SPREAD OF INFECTION IN OPEN BONE AND ITS BEARING ON THE TREATMENT OF PROJECTILE FRACTURE.

MARTIN AND PETRIE (*British Medical Journal*, Oct. 6, 1917) discuss the spread of infection in open bone in war fractures, with the following conclusions:

1. Soft parts killed by the direct effect of the missile require removal.

2. An infected fracture of the shaft of a long bone requires opening to the full extent of solution of continuity.

3. In infected fracture of cancellous bone the superficial debris of smashed trabeculae, etc., requires removal. Solid bruised bone is able to resist infection and may be left.

4. As penetration is at its maximum in the first few days, early operation is essential, especially in fractures of cancellous bone involving joints.

5. Every artery directly or indirectly supplying a fractured bone is of importance in the defence against infection.

6. In the presence of vascular injury proximal to the fracture, radical measures, such as amputation or resection of a joint, may be adopted with less hesitation. [J. B. H.]

#### TREATMENT OF A SERIES OF RECENTLY INFLICTED WAR WOUNDS WITH FLAVINE.

DRUMMOND AND MCNEE (*The Lancet*, Oct. 27, 1917) report further results of war wounds with flavine. Their conclusions are as follows:

(Continued on page viii.)

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(Continued from page vi.)

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[J. B. H.]

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[J. B. H.]

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## TABLE OF CONTENTS

January 31, 1918

### ORIGINAL ARTICLES

- MENTAL CONDITIONS DISQUALIFYING FOR MILITARY SERVICE. By Major L. Vernon Briggs, M.R.C., U. S. Army. .... 141
- VAGINAL DISCHARGE IN CHILDREN; STUDY OF 255 SELECTED CASES, WITH SPECIAL REFERENCE TO THE QUESTION OF THE DIAGNOSTIC AND SPECIFIC VALUE OF SMEAR EXAMINATIONS. By I. C. Rubin, M.D., F.A.C.S., New York. .... 147
- THE PRIMARY LESION OF TUBERCULOSIS; ITS SIGNIFICANCE, DIAGNOSIS AND TREATMENT. By William W. Howell, M.D., Boston. .... 152
- LIPIDS IN 181 DIABETIC BLOODS. By Horace Gray, M.D., Boston. .... 156

### MEDICAL PROGRESS

- PROGRESS IN PEDIATRICS. A RÉSUMÉ OF THE LITERATURE OF INFANTILE SCURVY DURING THE PAST FIVE YEARS. By John Lovett Morse, A.M., M.D., Boston. .... 160

### BOOK REVIEWS

- Kirk's Handbook of Physiology. By Charles W. Greene, A.M., Ph.D. .... 164
- Diseases of the Skin. By Richard L. Sutton, M.D. .... 164

### EDITORIALS

- MILITARY ANTI-TUBERCULOSIS PROGRAM PERFECTED. .... 165
- MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE. .... 167
- WAR-RISK INSURANCE. .... 167
- MEDICAL NOTES. .... 167

### CORRESPONDENCE

- REPORTING OF ACCIDENTS FROM LOCAL ANESTHETICS. Torald Sollmann and R. A. Hatcher. .... 178

### MISCELLANY

- RESOLUTIONS ON THE DEATH OF MR. RUTTER. .... 170
- INSTRUCTIVE DISTRICT NURSING ASSOCIATION. .... 170
- RECONSTRUCTION AND RE-EDUCATION OF UNITED STATES SOLDIERS. 171
- COLD-PACK CANNING AND BOTULISM. .... 171
- THE MASSACHUSETTS VENEREAL DISEASE PROGRAM. .... 172
- NOTICES, RECENT DEATHS, ETC. .... 174

## Original Articles

### MENTAL CONDITIONS DISQUALIFYING FOR MILITARY SERVICE.

BY MAJOR L. VERNON BRIGGS, M.R.C., U. S. ARMY,  
Senior Neuro-Psychiatric Service, Base Hospital,  
Camp Devens, Mass.

In addition to cases of insanity and mental deficiency, all armies have to deal with considerable numbers of soldiers with hysteria and neurasthenia. The prevalence of these disorders increases greatly during war and at times of large mobilization.

In a recent letter from W. Maule Smith, M.D., Medical Superintendent of the West Bromwich Infirmary in England, he informs me that in Great Britain the British have four base hospitals for mental and nervous cases, *viz.*, two in England, one in Scotland and one in Ireland. The Canadians have one and the Australians have three such hospitals in Great Britain. All patients suffering from nervous and mental conditions are returned from France and are then drafted to these base hospitals, where they are reassorted and sent to smaller hospitals which are reserved for them. Cases which are still in the Army are sent to these base hospitals direct. If discharged from the Army while suffering from mental disease, they are sent to the county hospitals, but are paid for by the Government. "Most of these men that I have seen," he says, "are suffering from special sense derangement, taking the form

of hallucinations of hearing and sight, also aphasia—or rather aphonía—lasting for a considerable time; amnesia and disorientation from the date of the casualty. The rule is that no case of mental disease resulting from fighting is certified in the ordinary way as insane."

From a still more recent letter from John Macpherson, M.D., Lieut.-Col. and President of the Medical Board, I quote the following: "Until recently all mental and nervous cases invalided from the expeditionary forces had been sent from France and other centers to this country (England). Recently, with regard to France, arrangements have been made for treating certain of the milder neurasthenics at base hospitals in that country. Cases occurring in Mesopotamia and Egypt can only be gradually transferred home after passing through base hospitals there and through hospitals in Malta, finding their way sooner or later to England. There are approximately 2700 beds in England, chiefly in asylums which have been converted into military hospitals. During their stay the patients in these hospitals are not certified. We are under promise to the country through the House of Commons to retain all overseas mental cases which are certifiable except, (1) general paralytics, (2) those with previous asylum history, and (3) bad epileptics. This applies only to those who have been with the overseas force.

"With regard to neurasthenics proper," Dr. Macpherson continues, "it is difficult to estimate the exact numbers. They are, as a rule, housed in special military hospitals, under special medical care. These hospitals have been converted specially for these cases. As the

number of casualties increases and the number of men serving the colors also increases, there is a gradual increase in the number of neurasthenics; and, in proportion to the severity of the fighting and the increase in the use of high explosives, the number of neurasthenics and shell-shock cases varies. They include the following classes: (1) shell-shock, (2) neurasthenics, (3) functional paralysis, (4) tachycardia, (5) epilepsies, traumatic and idiopathic, with a sprinkling of hysterias and various other nervous disorders.

"If you estimate that, of all beds for military purposes provided in this country, five per cent. are allocated to mental and nervous cases, you will, I think, have a fair estimate of what you will have to provide."

The report of conditions at Halifax for August, 1917, shows that for each unit of 500 returned soldiers, 30 are tubercular, 25 nerve and mental, 70 amputations. On arriving at the Halifax discharge depot, hospital trains are in readiness for the unloading, and the mental cases, each with an attendant, are unloaded first and are sent to the insane hospitals at Coburg, Ottawa, Col. Alfred Thompson in charge.

Up to January, 1917, there have been approximately 300,000 troops sent overseas from Canada, of which 175,000 have seen service at the front. Of these there have been reported among the Canadian troops in England 4,316 casualties under the grouping of nervous and mental diseases, that is about 15 per thousand. It has cost Canada about \$2000 per man to send her troops to the continent and return. It is easy to see what a mistake it is not to eliminate these mental and nervous soldiers, as far as possible, before sending the men overseas; as 13 per thousand of these men never got to the firing line. The nervous and mental casualties of Canadian officers and men were 2.38% of a total of 180,496 casualties of all kinds, including deaths, wounds in action and general diseases requiring admission to the hospital. They were made up irrespective of any question of discharge or permanent disability, such questions being determined at Quebec. Over 11,000 cases have been returned to Quebec and they are now coming in at the rate of 2,000 per month. From 4,000 general diagnoses of returned soldiers, made by the Medical Board at the Quebec discharge depot, a group classification is as follows:

Gunshot wounds, all kinds . . . . .	25%
Nervous and mental diseases . . . . .	12%
General medical diseases . . . . .	12%
Tuberculosis . . . . .	7%
Other cases . . . . .	44%
Total . . . . .	100%

Thus, in more or less permanently disabled soldiers, nervous and mental diseases divide second place with general medical diseases, and outrank, as they do in our Army, tuberculosis.

"The indetermination of the term 'shell-shock' has contributed to the confusion so common in military statistics on that subject. There seems now to be a strong temptation to designate as 'shell-shock' every medical case with nervous symptoms where the patient has been in the neighborhood of exploding shells. The tendency is to classify such disorders according to the apparent cause, without due consideration of the symptoms, course or, in many cases, the motive. A true concussion effect upon the nervous system, with organic changes, doubtless exists, and sets up symptoms similar to those of Oppenheim's grave traumatic neurosis. Surgeon-General Frothingham, who has been much in France, says that such cases are very rare. Most of the cases now denominated as 'shell-shock' present no features with which neurologists were not fully familiar under the terms 'hysteria' and 'neurasthenia,' and they carry with them the tendency to exaggeration and shamming so common in those neuroses. Near the firing line, the diagnosis of 'shell-shock' is made only when physical evidences of injury are also present or when the soldier's own statement as to what happened to him is fully corroborated.

"It is evident from the case records of returned Canadian soldiers that this new term is also made to cover various mental diseases, notably dementia-praecox, which existed before enlistment, and would have developed in due course without reference to military service."

On Aug. 1, 1917, the War Department issued, from the office of the Surgeon-General, Circular No. 22, which is, in part, as follows: "For the safety, efficiency and economy of the military service, it is highly essential that nervous and mental diseases be recognized at the earliest possible moment. Nervous and mental diseases may, and frequently do, exist in persons who are strong, active and apparently healthy, and who make no complaints of disability. Such persons are, however, less than useless as soldiers, for they cannot be relied on by their commanders, break down under strain, become an incumbrance to the Army and an expense to the Government. Disorders of this character are often demonstrable only as the result of a special and painstaking examination directed toward the mind and nervous system. This circular is published for the special purpose of calling the attention of medical officers to the particular diseases most frequently overlooked on general examination, and the symptoms most important to their diagnosis; and to certain characteristics in personality and in behavior, which might raise the question of mental disease.

Queerness, peculiarities and idiosyncrasies, while not inconsistent with sanity, may be the beginnings or surface workings of mental disease. A soldier is too important a unit for variations from a standard of absolute normality not to be looked into before the recruit who presents them is acceptable for service. To aid



the neurologist and psychiatrist in these ways, the camp surgeon shall direct all medical officers, dental surgeons, instructors, hospital sergeants, barrack sergeants, and others who come in close contact with recruits, to refer to him or the camp surgeon all recruits who persistently show any of the following characteristics: Irritability, seclusiveness, sulkiness, depression, shyness, timidity, over-boisterousness, suspicion, sleeplessness, dullness, stupidity, personal uncleanness, resentfulness to discipline, inability to be disciplined, sleep walking, nocturnal incontinence of urine, and any of the various characteristics which gain for him the name of 'hoob,' 'crank,' 'goat,' 'queer stick,' and the like."

In detailing psychiatrists and neurologists to special duty with the armies, the Surgeon-General has had in mind (1) the proper care of soldiers who become incapacitated through mental and nervous disease, (2) the special examination of recruits in the training camps, in order that those who, because of neuropathic or psychopathic conditions, are unfit for military duty, may be identified and discharged from service.

Until the troops move abroad, the chief and most important responsibility of the military psychiatrists and neurologists will be the special examination of recruits. It is obvious that no man should be eliminated from the service who is fit to render a valuable service in this emergency. On the other hand, it is quite apparent that individuals suffering from certain forms of nervous and mental diseases should not be permitted to enter into service, as experience with the American armies has shown quite conclusively that such individuals are not capable of military service even in time of peace, and experience in the European armies has shown beyond question that such individuals are not able to withstand the rigors of modern warfare. At critical times they go to pieces, with the result that the military force is weakened, is hampered in the free performance of its function, and the Government is likely to be burdened after the war with the care of a large number of invalids.

It is important that the potential as well as the actual conditions of the recruits be kept in mind. It must be remembered that we have a perfectly definite situation to meet,—which is the elimination of men who, because of nervous or mental instability, are unfit for military service. Experience in the armies abroad shows quite conclusively that mental defect, *per se*, is often not sufficient cause for the rejection of a recruit. A previous history of insanity, epilepsy, chronic alcoholism, or spinal or cerebrospinal syphilis in any form, or a marked history of nervous instability, or difficulty of environmental adjustment over a long period, should be sufficient cause for rejection.

The duties of the psychiatrists and neurologists at the cantonments are two-fold:

1. Service at the base hospital, under the commanding officer of the hospital, for the care

of nervous and mental cases, and for the examination of all cases referred for special examination by commanding officers, regimental surgeons, or others.

2. Service under the Division Surgeon, for the purpose of making general surveys of troops during group examinations or during small formations, and at other times, and selecting cases for special examinations, which give evidence of mental or nervous instability.

Co-ordination and quickness of perception must be gone into the examination of recruits when it is realized what the conditions are to which we are sending these men. For instance, when the enemy use many of the poisonous gases which have been creating such havoc among our troops, they must be capable of quick and intelligent action. Thirty per cent. of all bombs now used by the Germans and Allies are gas bombs. These include the paralyzing gases, that is, prussic acid, which is poisonous in one part to 10,000; and the lachrymating gases, ethyl-chloride, for example, which puts the soldier out of business when diluted 1 to 1,000,000. Then there are the cloud gases, such as chlorine or gas known as phostagen, which is a combination of chlorine and carbon monoxide. Two or three breaths of this gas bring on a chronic pneumonia which usually results in death in three to four days. The enemy bring this gas to the front in liquid form, confined in drums through which pipes are led toward the foe. When the wind is in the right direction the air is let into these drums, which vaporizes the contents, and the gas, being heavier than air, rolls over the surface of the earth and into the trenches and dug-outs, in the form of a cloud, visible by day, but invisible at night. Gas masks, with the neutralizing chemicals attached thereto, render all the 12 or 13 gases used by the enemy harmless, but these masks have to be put on within six seconds from the moment the signal is sounded, else the damage is done and the soldier's death is only a matter of time; or if he has not breathed enough gas eventually to cause his death, he is rendered useless for further service—in other words, a man once gassed is considered fit only for civil life and is often not much good for that.

Quick action is again necessary in the handling of the hand-grenade. Holding one of these bombs in the right hand, the soldier has to remove a plug or cap, which automatically lights the fuse. If this bomb does not leave his hand and get away towards the enemy in four and one half seconds, he and his companions, or those near him, are blown to pieces. Once again: when the Allies are preparing for a charge or going over the top, a barrage of fire from the heavy artillery precedes their advance; the soldier has to be intelligent enough to time that barrage, and the barrages following it, so as to keep between them and not get into them.

Our examination of recruits at Camp Dev-

ens, which include the referred cases from over 30,000 men, have brought out the fact that the general practitioner has not been able to pick out many men whose mental condition disqualified them for service or who were mentally defective.

The Neuro-Psychiatric Unit at Ayer is composed of the following staff: Major L. Vernon Briggs, Capt. Morgan B. Hodgkins, and Capt. Douglas A. Thom. Two wards are nearly completed for this unit, and apparatus for hydrotherapy and electrotherapy installed; and a full corps of nurses and attendants and specialists in hydrotherapy and electrotherapy will soon be actively engaged in the care of neurological and psychiatric cases referred from the Base Hospital of 1000 beds and from the infirmaries of the several regiments. In the meantime we are examining the recruits referred to us. It has been interesting to observe several well-defined cases of general paralysis coming out in the third decade.

When we started our neuro-psychiatric examinations we thought that neurology had but a small part to play in our service, but at the present time it occupies not less than 30 per cent. of all our cases. We find many cases of residual infantile paralysis, neuro-syphilis and epilepsy who have been holding responsible positions; and a large group of epileptics whose convulsions have not been of sufficient severity or frequency to keep them away from work, but which would render them unfit as soldiers.

We have also found many imbeciles who should be committed. Among the chronic alcoholics it has been interesting to note the frequency of convulsions; many cases who have had convulsions have not had delirium tremens, and some who have had delirium tremens have not had convulsions. We have been rather surprised not to find more malingerers, there being but comparatively few among cases referred to our clinic.

The method of examination of troops, be they referred or not, is neuro-psychiatric and covers seventeen questions, which take about six to ten minutes to go over. If these questions bring out abnormal conditions, a further examination is gone into. The seventeen questions are as follows:

1. Name.
2. Age.
3. Civil State.
4. Birthplace. (If of alien birth, length of time in States.)
5. Character and extent of education.
6. Nature of former occupations, and length of service in each. (b) Reasons for abandoning any given occupation.
7. Reasons for entering service.
8. Date of mustering in.
9. Attitude toward duties.
10. Attitude toward fellows.
11. Penalization for misdemeanors.
12. Consumption of alcohol.

13. Venereal infection.

14. Sleep (dreams).

15. Appetite.

16. Digestion.

17. Emotional tone.

This is always followed by a brief neurological examination whereby the tendon reflexes are tested in the usual manner, pupils examined for the accommodation to light and distance, the tongue, facial muscles and fingers tested for tremors. Station, gait, co-ordination, are all tested in the usual way. If any of these tests indicate that a further examination is necessary, it is, of course, followed up to determine the diagnosis.

Soldiers who have had this examination at Camp Devens to date have been specially referred to the Neuro-Psychiatric Clinic by regimental surgeons, regimental officers, headquarters division, and include disciplinary cases and cases from different services at the Base Hospital. To date these number over 500 cases, of which 372, or 75%, have been rejected as unfit for military service.

The rejected cases fall within one of the following groups: feeble-minded, epileptic, and the constitutional and psychopathic states. Two or more of these groups may be associated in the same case, that is, the epileptic may be primarily feeble-minded, and may eventually develop psychotic symptoms.

The four groups may be further divided as shown by the charts, which represent the work of this unit up to November 7. This represents over 1% of the entire 76th Division, and includes officers as well as enlisted men. It is fair to say that over 70% of the rejected cases might have been missed in a general physical examination, as given by the exemption board, but it is needless to say that such diseases as chorea, neuro-syphilis, hemiplegia and paraplegias and palsies should have been easily recognized and exempted.

About 50% of all the cases rejected, in the opinion of the members of the Neuro-Psychiatric Clinic, would be benefited by institutional treatment and care. It is obvious that these cases should be followed up, and endeavor made to institute proper treatment and care.

In closing I would like briefly to mention six cases which appear to us of unusual interest or of social significance.

CASE 1. P. M. J., age 27 years, born in Plymouth, Mass. Student at Amherst Agricultural College. At the age of 11 was a student of nature and spent much time in the woods, observing the habits of animals. Acknowledged that he had gonorrhea, but denies syphilis. Referred to our clinic by the Company Commander, on account of statements made in the presence of officers, especially in regard to an invention which would revolutionize the running of automobiles. At our examination he stated that he could furnish the U. S. Army with meat at four cents a pound; that he had a million dollars which he could put his hand on tomorrow, which he could use as capital. He later

confided to one of us that the million, and as much more money as he wanted, was in South America, waiting for him; that some woman was going to give it to him because of his invention regarding ice, which idea she had put into execution and made millions of dollars. He stated that he had interviewed hundreds of soldiers at Camp Devens and ten officers; also, the same number of soldiers and officers in England; that he added together their opinions as to war, struck an average, got the percentages, and had thereafter dismissed the whole question from his mind. He made other extraordinary statements and was somewhat threatening in his attitude when expressing his impatience at the officers for not giving him a hearing, and said that the hospital authorities were keeping him in the wards when he had so much important business to attend to. The Wassermann showed four-plus reaction. His case was diagnosed as general paralysis, and sent to the Psychopathic Hospital in Boston.

CASE 2. H. N. B., 22 years of age, appeared complaining of severe tonic spasms in both the upper and lower extremities. These spasms were more severe when muscles were at rest, and passed off after passive movements had been exercised on the arms and extremities, so that after patient had used either arms or legs for any time he had little difficulty and no pain until they were put to rest. Neurological examination presented nothing worthy of note excepting a marked exaggeration of the deep tendon reflexes. Family history negative, with the exception that the patient claimed that mother and brother suffered from the same trouble. Diagnosis: congenital myotonia (Thomsen's disease). Although this case hardly falls within the realm of either mental or nervous diseases, it appeared to be of sufficient interest to justify reporting, inasmuch as the literature up to the present time reports only about 30 similar cases.

CASE 3. W. F. M., 301st Infantry, born Feb. 9, 1899; went as far as the 8th grade in school, but at 14 was dropped on account of truancy. Has a brother in Bridgewater State Hospital for the Criminal Insane; has been arrested once for drunkenness in Dedham, twice in Boston, three times in Roxbury. Was seven years employed in a shoe factory, and was drafted to Ayer from his residence in Boston, Oct. 10. On the following Sunday at 2.30 p.m., he walked out of Camp and all the way to Boston, via Lowell and Arlington. He said that the men at Camp were framing him up and injecting electricity into him, especially into his legs. After one week at home, he told the brother of the U. S. District Attorney about the electricity, and how they tried to "get him" at Ayer with electricity. He was advised to see the District Attorney, who had him arrested, and he was sent to Fort Banks as a prisoner for desertion. I was ordered to Fort Banks to examine him, and found him somewhat demented, with hallucinations of hearing. He said that his thoughts came back to him by voices which he heard. He now believes that people are calling him names, especially "superstitious fairy." The voices also swear at him, and tell him the Federal authorities are trying to frame him up. He acknowledged being at one time in a Psychopathic Hospital, and inquiry at the Psychopathic Department of the Boston State Hospital reveals the fact that he has twice been an

inmate of that hospital, and that his last discharge was under date of Sept. 20, 1917. Diagnosis: dementia precox, paranoid form; rejection recommended.

CASE 4. F. E. D., single, age 24; born and resides in East Hartford, Conn. Went to 8th grade in school; says he went "crazy" over one George Cohen, an actor; although he hunted for him he never found him. Claims he was doped and laid up in New Haven, and that when he tried to get away they knocked his head on a cement floor. Gives history of residence at the Connecticut Hospital for the Insane, Middletown, Conn. Patient demented and somewhat excited. Was discharged by our recommendation, after diagnosis as dementia precox. After being paid off and his ticket bought he was left at the station, although we had recommended that he be attended to his home in Connecticut. He did not take the train, but returned to the hospital, and demanded that he be sent to the trenches to fight. On account of creating some disturbance, he was arrested and placed in charge of the Provost Marshal in the civilian jail in the camp. Here, at supper time, he drew a knife across his throat, and on this account, and on account of a newspaper reporter getting hold of certain facts regarding the case from the jail authorities, to save further publicity and to care better for the man, he was returned to the Base Hospital, and later sent to the Psychopathic Hospital in Boston in an ambulance.

In reply to an inquiry directed to the Connecticut Hospital for the Insane, Dr. Floyd Haviland, the Superintendent, wrote as follows: "F. E. D. was in our Hospital from Oct. 22, 1912, to April 15, 1913, being on the latter date discharged into the custody of his father as improved. At the time of his admission he was 19 years old. The onset of the psychosis was said to have been five weeks previous to the date of admission. He was first taken to the Hartford Retreat, where he remained until Oct. 18, 1912. According to the committing physicians, he imagined that he was a great athlete and made application to Yale College for the appointment as Assistant Doctor of Athletics. He took off his clothes in New Haven and tried to do various athletic feats on the street; was violent and smashed furniture in his room. The day after admission he was found lying in a nude condition on the floor, with all muscles tense, his extremities extended in a peculiar manner. When spoken to, he sprang up and moved about. He seemed to be dazed, and questions had to be repeated in a loud tone before he would reply. He stated that he had been doped by "George Cohen" and others. Sometimes he would stop in the middle of a speech, and look fixedly at some spot as if he heard someone. A few days later he was up and dressed, and spent much of his time standing in one place, drumming on the door and repeating senseless words or syllables. At night he usually covered his head with the bed-clothing. Physically, there was a positive Wassermann of the blood serum, there was slight inequality of pupils, knee jerks were absent, and there was considerable tremor of eyelids and protruded tongue. According to the records he was diagnosed dementia precox, catatonic form, with a possibility of dementia paralytica to be considered. According to the records he became more composed and for some time before his discharge he assisted in the work on the farm."

CASE 5. W. H. P.; arrested while intoxicated, for insulting an officer; three empty Jamaica ginger and one vanilla extract bottles found on him. He stated that he was released from Salem Jail, on condition that he report to the exemption board and accept service in the National Army. He says that he was arrested on July 18, 1917, and sentenced to three months in the Salem Jail; sentence suspended. Arrested again for similar offense about Aug. 12; received a three months' suspended sentence in the House of Correction, Salem. Was serving this sentence when his father received a pink card requesting him to report to the exemption board, Salem, Sept. 18. He said he was pardoned by the County Commissioners on the morning of Sept. 18, and sent to the office of the local board in Masonic Temple, where he said he was told by the chairman to report again on the 23rd, or else he would be sent to jail; this he did. He has been intoxicated twice since coming into camp. He began drinking at 16 years of age; the last six months has drunk about one quart of whiskey a day. Thinks he has been arrested at least fifty times for drunkenness and once for larceny of crackers from Boston and Maine freight car; has served two jail sentences for drunkenness in Salem, has been sentenced three times to Bridgewater State Farm and three times to Concord Reformatory. Was released from Concord in 1914 for one year, on condition that he go to the Norfolk State Hospital, which he did on Sept. 21, 1915, and was released Nov. 7, 1915.

CASE 6. F. S. Referred by Company Commander. Patient came under armed guard, having attempted to run away several times. Has on him the following paper, which he claims to have presented to the exemption board:

"Bangor State Hospital, Bangor, Maine.  
August 19, 1917.

"This is to certify that F. S. (correct name —) has been a patient in this hospital from Feb. 17, 1914, to May 18, 1917. On admission he was 23 years of age; born in Russia; length of residence in United States unknown. During his residence in the hospital he was depressed, agitated, suspicious and suffering from hallucinations and delusions. During the last three months he improved and was allowed to leave the hospital on a six months' parole. Clinical diagnosis: dementia precox, catatonic type.

L. F. NORRIS, Acting Superintendent."

This case was rejected.

We have also referred to our clinic the so-called "conscientious objectors." These may be divided into four groups: (1) the objector who is really *conscientious*, who objects to taking life or entering into combative service, but who is willing to take up any other branch of service, including that of stretcher-bearer from the first-line trenches; (2) the *religious objectors*, including those calling themselves "Pentecostals," members of the Society of Friends (Quakers), Seventh Day Adventists and members of the International Bible Students' Association. Some of these religious objectors are willing to enter into the service as non-combatants; others refuse to become any part

of the military service. (3) The *Christadelphians*, who have now become exempted in England, providing they agree to engage in work of national importance, such as farming, factory work, etc. These men refuse to don military clothes or to salute an officer or do any military service, even service in military hospitals, and declare they would none of them raise a hand to save a soldier if he was dying and such an act would save him, because the soldier is part of the military system; (4) The *objector who is deluded*, whose abnormal mind has been swayed by stronger normal minds, and who is mentally diseased or defective, and must be promptly rejected.

Following is the classification of those rejected to November 1, 1917, but does not include some 30 whose papers have not been signed, pending the obtaining of histories or further observations in the Base Hospital:

1. Defective mental development .....	164
2. Epilepsy .....	92
3. Chronic alcoholism .....	27
4. Dementia precox .....	12
5. Constitutional psychopathic states ....	17
6. Neurasthenia .....	9
7. Chorea .....	5
8. Manic-depressive insanity .....	7
9. Hysteria .....	4
10. Cerebrospinal syphilis .....	3
11. Tabes .....	2
12. General paralysis .....	2
13. Drugs (morphine 6, heroin 1) .....	7
14. Toxic psychosis .....	1
15. Traumatic psychosis .....	1
16. Hemiplegia .....	2
17. Paraplegia .....	1
18. Contracture .....	1
19. Migraine .....	2
20. Congenital myotonia (Thomsen's disease) .....	1
21. Enuresis (exaggerated) .....	2
22. Psychasthenia .....	10

372

These rejections were made from a total of 1324 officers and 27,482 men, the military strength of the cantonment to November 1. The total rejections to date for all causes have been 1 in every 8 of the draft sent to Ayer.

The figures I have given show only a cross-section, as it were, of our work resulting in the elimination of the mentally and nervously unfit, for our work is far from finished. At the present time we are having referred to us about 15 cases a day, and our percentage of rejections is greater as time goes on, because of the more intimate knowledge of the hospital staff and regimental surgeons of the kind of cases which should be referred.

# VAGINAL DISCHARGE IN CHILDREN; STUDY OF 255 SELECTED CASES, WITH SPECIAL REFERENCE TO THE QUESTION OF THE DIAGNOSTIC AND SPECIFIC VALUE OF SMEAR EXAMINATIONS.\*

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[From the Special Clinic for Vaginitis in Children, Mt. Sinai Hospital Dispensary.]

THE problem of vaginitis in children presents nearly as many difficulties today as before the gonococcus was discovered. Before the etiological cause of gonorrhea was established, vulvovaginitis of children was supposed to be due to a variety of causes, all of a non-specific nature. Soon after Neisser's discovery, the notion that vaginal discharge in small children was also venereal in origin became predominant. No longer was this to be treated lightly. An active local therapy was to replace the almost *nolle me tangere*, and both pediatric and gynecologists recommended measures which had been found useful in the treatment of gonorrhea in adults.

In view of the general prevalence of gonorrhea, the incidence of gonorrheal vaginitis in infants and children was assumed to be proportionately great. In consequence numerous attempts were made by all persons interested in child welfare to study the question. The American Pediatric Society through its special committee on vaginitis has recently published its report upon a very extensive investigation on the subject.<sup>1</sup> The resolutions embodied in that report contain the most approved recommendations for sanitary and hygienic measures to be adopted both for the prophylaxis and the actual management of the disease. Without a single exception these excellent rules may be profitably adopted in all communities, since they are helpful not only in the matter of vaginitis but also in the general prevention of the infectious diseases of childhood.

In this connection it may be well to mention that these recommendations had been practically anticipated *en masse* during the progress of our work at the Mt. Sinai Hospital Dispensary. With the efficient aid of the two nurses of the Social Service of the hospital, Mrs. Carrie C. Gibson and Miss Helen J. Moses, it was possible to carry out the follow-up system in the vast majority of our cases. Our work was further encouraged and stimulated by Dr. S. S. Goldwater, Director of Mount Sinai Hospital. His interest in the problem was all the keener since it became a matter of municipal importance to the Health Department. In one of his publications on the subject<sup>2</sup> he stated that "a form of vaginitis, which is bacteriologically indistinguishable from gonorrheal vaginitis, is a com-

mon condition among children in this city and elsewhere, and that this is well known to clinicians." Further, "that as far as he was aware the problem had not as yet been solved anywhere," and as Commissioner of Health, "can only promise on behalf of the Department, unremitting attention to it, in the hope that a working program may ultimately be formulated." Still further, to quote the Health Commissioner, "as the condition in question is one which, notwithstanding the most intensive treatment, often persists for months and even years, it would be necessary to inaugurate a method whereby the education of excluded children could be continued. The only logical method would be to send private teachers into homes of infected children."

The importance to the municipality from a social, economic, and educational standpoint can, therefore, scarcely be exaggerated if it can actually be established that vaginal discharge in children of school age and under is gonorrheal. The general consensus of medical opinion, according to Trist and Kolmer,<sup>3</sup> favors the gonococcus origin of the vast majority of cases of vulvo-vaginitis in children. Upon this assumption are based all rules for prevention, control and cure of the disease as applying to homes, hospitals and communities. Most observers have accepted this opinion as an established and indisputable fact, and upon that premise have also conducted their medical treatment. My observation of this class of cases during the past six years has led me to a conclusion contrary to that which is generally held concerning the nature of this affection in children.

The purpose of the present paper is to detail my experiences with vaginitis in children studied and treated in a special class at the Mt. Sinai Hospital Dispensary for a period of four and a half years. In this special class, which was established in June, 1912, we had an opportunity to study the clinical manifestations and varieties of vaginitis in infants and children. I shall not enter into the details of the institutional administration or the technic of the treatment of the children in this dispensary class, but rather I shall call attention to certain phases of the problem which are of fundamental importance. Two points will receive special attention, since upon their solution depend all the rest:

- 1—The incidence and prevalence of gonorrheal vaginitis in children.
- 2—The value of smear examinations in the diagnosis of gonorrheal vaginitis in children.

Since the class for vaginitis in children was established, altogether 255 cases have been observed. Of this number, 50 were treated by Dr. Barnett during the first year. His conclusions were published in September, 1913.<sup>4</sup> In his paper, and in fact in all recent publications on vulvo-vaginitis in children, the gonorrheal nature of the disease has been taken more or less for granted. I was under the same impres-

\* The present paper was originally submitted as a brief report on the progress of this work to Dr. S. S. Goldwater, Health Commissioner, New York City, 1914-1915, and Director of Mount Sinai Hospital.

sion when I undertook an investigation into the cause of the persistence of gonorrheal vulvovaginitis in children.<sup>5</sup>

By means of the electric lighted speculum we were able to study the appearance of the vaginal portion of the cervix uteri, the entire vagina, and also to note the distribution and amount of the discharge. In all these cases we had supposed the diagnosis of gonorrhea to be definitely established.

When I took up the work at the clinic I found that the diagnosis of gonorrhea was made by smear examination. Upon a positive report for "G." in any given case with some vaginal discharge, the little patient was at once subjected to treatment which was deemed most satisfactory in our experience. When, however, smear examinations for gonococcus proved positive in a number of apparently normal children who exhibited the slightest vaginal secretion, it became obvious that some other method than smear examination was necessary to establish the presence of gonorrheal infection. In the absence of special cultural methods for differential diagnosis or more elaborate bacteriological facilities, I was obliged to guide the treatment of these cases of so-called gonorrheal vaginitis in children according to the reports of frequent smear examinations. As the vast majority of the little patients attended the clinic regularly I was able to compare the progress and character of the vaginal discharge with the bacteriological report of the slide examination. In one case more than 50 smear examinations were made. This case alone would suffice, if no others were available, to show how little dependence can be attached even to Gram-staining of the smears. This case will be referred to again.

Of the 255 cases to date, I have taken the first 100 consecutive cases for analysis. The anamnestic data were both scanty and defective. It was soon seen that they could not be grouped or utilized for statistical purposes. My chief object in collecting the data, scattered as they may seem, was to determine, if possible: 1. The prevalence of gonorrhea among little children. 2. The meaning of vaginal discharge as such. 3. The diagnostic value of smear examination. 4. The relation between treatment, discharge, and a positive or negative report of gonorrhea. 5. What is essential in the establishment of a positive diagnosis. 6. Contagiousness.

The majority of the patients were referred to the vaginitis class by the chiefs of the children's clinics in the dispensary. Only a few were brought by parents directly to the vaginitis class. It is remarkable that in four years only 255 cases were treated in the special class. During these four years approximately 50,000 children were seen in the children's classes at the dispensary. The percentage of children referred by the physicians and nurses to the vaginitis class for the treatment of the "V. D." (venereal disease) was 1 in 200 cases. This percentage seems small in comparison with the

incidence of this condition as estimated by other writers. On inquiry I learned that the "V. D." is not especially sought for during the physical examination but usually the mother calls attention to it, whereupon smears are taken. The parents, however, attach no special importance to the discharge unless it is profuse, and avoid having the children treated because of their fear of injury to the hymen.

While all cases referred to the vaginitis class were supposed to have had a positive smear examination before they were sent to us for treatment, a few were referred without such preliminary examination. In every instance we sent smears of new cases for examination. It is interesting to note that out of the first 100 consecutive cases, 29 smears were returned negative, 60 smears positive, and 11 were undetermined.

*The cases with positive first smears on subsequent examinations were reported negative for one, two, three or more times consecutively or alternately. The cases with negative first smears in 5 instances proved positive after one to six months of observation.*

A great many of the positive first smears presented only a slight amount of discharge, in some instances no greater than would be anticipated in the normal female child. A few of the cases with negative first smears showed, however, a rather profuse discharge which would justify the suspicion of gonorrheal infection.

Of the 100 cases only 21 showed abundant discharge. In 7 the discharge was sero-granular; in 5 the discharge was moderately purulent; in 9 the discharge was profusely purulent.\*

All the rest of the cases showed for the most part red streaks at the vulva, folliculitis, eczema of vulva, merely moisture or a slight amount of sero-granular discharge without inflammatory changes evident in the vagina. In a number of instances there was a similar secretion within the vagina without, however, acute changes or evidences of chronic changes in the vaginal mucosa. Where there was purulent discharge it was also found abundantly within the vagina, and in a few instances the mucosa was angry looking and swollen and bled easily. The majority of these cases had never before been treated for the vaginal discharge. This fact must always be taken into account because treatments of various kinds undoubtedly induce certain changes in themselves. These changes are either of traumatic origin or are due to secondary infections. The cases which formed the basis of our previous study had all been subjected to prolonged treatment before we examined them.

The reports of smear examinations was out of all logical relation to the clinical status of the case, the amount of discharge, the duration

\* Purulent in the clinical sense. In our reports it was not stated whether pus cells were abundant or not.



of the discharge, and especially, to subsequent examination. We found, too, that *frequently without any treatment* a second report was returned negative, a third positive; and then irregularly positive and negative; while, after active treatment, a negative case would be reported positive, and then irregularly positive or negative.

I have attempted to tabulate the cases with reference to the relation between the laboratory reports of smear examination, the amount and character of the discharge and the different methods of treatment. Altogether there were six hundred and twenty smear examinations. The results are at such great variance in regard to the character, amount and duration of the discharge, that it is hardly worth while to present them all in detail. I will content myself with giving the history of Case 1.

S. J., age 10; for the past four years she noticed vaginal discharge. Prior to this she had some exanthematous disease for which she was treated at Willard Parker Hospital. She dates the onset of the discharge from that time. Patient was referred from one of the pediatric clinics at the Mount Sinai Hospital Dispensary, on April 3, 1912. There was then a slight amount of secretion which was positive for gonococcus. Endoscopy showed the vaginal mucosa bathed by thin sero-granular secretion; there were no acute inflammatory changes. Treatment was begun by Dr. Barnett, who put her on urotropin internally and argyrol 10% locally. He tried in succession silver nitrate 10%, bichloride of mercury 1-10,000 to 1-4000, then tincture of iodine and lugol solution for irrigations, and finally tr. iodine applied locally to the vagina. The smear examinations during this time, i.e., a period of 16 months, were positive seventeen times and negative eighteen times. August 19, 1913, I examined the patient and found then a sero-granular discharge. The child in the meantime had developed and seemed normal in other respects. There were no symptoms suggestive of metastatic spread of the disease. September 18, 1913, rectal examination to determine whether there was any peritoneal exudate, tubo-ovarian disease, etc., proved negative. There was no thickening of the adnexa; no masses were palpable, and the uterus was small and freely movable without eliciting tenderness or pain. Smears were negative on 4 occasions in the period between September 28, 1913, and October 31, 1913. The discharge was considerably less; 10% silver nitrate applications were used. December 1, 1913, she was without discharge and was therefore not treated but observed till January 19, 1914, when she again appeared with a slight amount of secretion. This was negative for gonococcus. She was then treated by protargol 25% topically, and again by painting the cervix and vagina with tr. iodine. As the amount of discharge was almost negligible I decided to let her stay away for a longer period. She returned two months later with the local condition the same as when last seen. Thereafter, for a period of 15 months, although the character of the discharge was the same and no manner of treatment employed, the vaginal smears continued to be irregularly positive and negative. The number of negative reports would preponderate in the

proportion of 3 and 4 to 1. The child is now 14 years old, has had her menses nearly a year. She has had no disturbance to speak of during her periods and appears to be well developed in every way. The smear examinations are still positive and negative. Altogether there were over 50 slide examinations.

**Summary:** A child 6 years old is ill with one of the exanthemata, for which she is treated at a special quarantine hospital. She leaves the hospital with vaginal discharge. This is untreated for four years, at the end of which time treatment is begun by various methods for four years. Puberty sets in meanwhile and the girl develops normally. The discharge becomes negligible, but slide examinations are variously positive and negative, no matter whether she is treated or not treated.

While many of the other children were not observed for a similar length of time, their history would fit in precisely with any given period of time under which this patient was observed. It must be said in this connection that smears were taken from the very depth of the vagina through the aid of the endoscope devised for this purpose, and that even the vaginal portion of the cervix was accessible in every case.

It soon became evident that if we were to rely solely upon the report of the *smear examination we could make no headway with any kind of treatment*. When the discharge disappeared under whatever procedure we adopted, and the patient's condition could be regarded as perfectly satisfactory, the report, nevertheless, would be returned positive or negative. When the child appeared for control examination from one month to two years or more after further treatment was considered unnecessary, the same experience with the smear examination was encountered.\*

The relation between active treatment, the smear report and the character and amount of the discharge was very interesting. At first I used strong solutions of silver, as recommended by Kelly. After each application there followed a very profuse discharge of mucus. The smear reports from this discharge were often positive and occasionally negative. The silver solutions were then used in weaker dilutions, and by and by the discharge became less and less and almost absent.

*A similar reaction took place in cases with very scanty discharge*—cases which appeared simple and of the non-infective type of vaginitis. As time went on I began using weaker solutions and used argyrol, which had the advantage of being practically painless and of being more oily and hence easier of application. The amount of reaction was considerably less. Later on I adopted the plan of infrequent applications, and for control purposes, in those instances where I felt clinically certain of their non-gonorrheal character, I simply observed them, took smears from time to time but did not

\* Barnett came to the conclusion that three consecutive smears could determine a cure, but added that the children were to return for further control.



apply medication. The latter group of cases did better as far as discharge is concerned; *the smear reports were just as confusing as in other cases.*

#### DISCUSSION OF THE PROBLEM.

The contradiction between the smear report and the clinical status of the case may be discussed from two viewpoints: first, that the gonococcus, if responsible for vaginitis in children, has markedly variable activities, often lying dormant, capable of being stirred to activity by certain medication, or more often, perhaps, by virtue of its own peculiar biologic properties, which are not exhibited by the adult form; and second, that the organism reported by the smear is some other organism than gonococcus, almost indistinguishable from it but present in the vaginal discharge without having the pathogenic significance of the gonococcus. If the first viewpoint were correct, then practically all of the 255 cases must be regarded as gonorrheal; and if we consider that a great many cases go unobserved or are untreated, the prevalence of this disease might be regarded as truly formidable. If young girls who commonly have vaginal discharge were subjected to smear examinations and a similar organism found, the incidence of innocent gonorrhea would be almost universal. No one, however, thinks of charging young girls of the age of puberty with gonorrheal infection because they happen to have some discharge. Vaginal discharge is a very common thing, and is only natural because a certain amount of secretion is physiological and normal for all mucous membranes. The onset of menses, etc., naturally accounts for a greater secretory activity of the genitalia in young girls. *In children and in infants there are other factors that enter into play.*

Inquiry into such factors in the 100 children in whose cases a definite history was obtainable elicited the fact that 32 had been in hospitals suffering for the most part with an exanthematous disease; in other instances they had pneumonia, typhoid, dysentery, appendicitis, chorea, etc. In 15 instances there was a definite statement that the child had not been confined in any hospital, but there is no record of whether these children were ill at home just prior to the onset of the vaginal discharge. It is not necessary to think of a direct gonorrheal inoculation, as for example, by means of thermometers or careless handling by nurses infected with the venereal trouble, etc. The exanthematous disease may properly be assumed to cause a certain amount of desquamation of the vaginal mucosa; secondary invading microorganisms propagate more in the discharge. The micrococcus catarrhalis, morphologically often indistinguishable from the gonococcus in the simple smear examination, is one of these organisms. In the other diseases with pneumococcus, the meningococcus, the streptococcus and the other

pathogenic bacteria present in the body these microorganisms may set up a vaginitis with purulent discharge similar to that seen in cases of acute suppurative otitis.

Vaginal discharge in infants and small children may have the same pathogenesis, and in my opinion is far more commonly due to these bacteria than to the gonococcus.

Apart from these considerations, careful observation of small infants has shown repeatedly that the fecal motion bathes and soils the vulva and the clitoris and leaves excreta in the labio-cutaneous and interlabial grooves, and at the vestibulum. Urine also leaves its residue. If the child is not frequently and carefully cleaned after each soiling there is the nidus for more bacteria, and in many instances the vagina is invaded.\* During the act of crying, coughing, rapid and labored breathing and straining, particularly during acute illness, the hymenal orifice opens and closes, and not infrequently debris such as above mentioned is aspirated into the vaginal canal. *The colon bacillus and other rectal flora under the new influence of even normal vaginal secretions may be assumed to take on an irritative activity and set up a vaginal discharge.* When one reflects how often and for how long infants and even small children are obliged to lie in their crib before receiving necessary attention in the large wards of hospitals, owing, of course, to inadequate nursing facilities, it will be seen that this spontaneous method of infection is not so remote a possibility.

In favor of this idea is the comparative scarcity of vaginitis in children ill with an exanthemata but who are treated at home.† The presence of pus in the vagina, even though it be in that of infants, irresistibly suggests a venereal origin. In this connection I may mention the one case in our series which had for a long time been treated by vaccine in another clinic for gonorrheal vaginitis. This little girl had suffered from a very profuse and very obstinate discharge which cleared up promptly on the removal of an incrustated hair-pin from the vagina.‡

A small number of children date their discharge from birth. This does not necessarily mean gonorrheal infection. I have examined a number of female fetuses 4 months old and over and found a whitish discharge from the vagina in a number of them. *Treatment in innocent cases may serve to plant bacteria where they did not exist before and to start a chronic discharge.* To obviate such contamination, in simple cases which clinically make the impres-

\* Dr. Martha Wolstein of the Rockefeller Institute, who kindly examined some smears for control purposes, reported that she found fecal material microscopically, though the swab was carefully applied through the endoscope to the depth of the vagina, in every case in which smear was made.

† Where there may have been arthritic symptoms but where the gonorrheal character was not definitely established by x-ray, at least, or by actual recovery of the gonococcus from the joint, the diagnosis may be left in doubt.

sion of a non-gonorrheal vaginitis, I have massaged the vagina through the rectum, succeeding in this way in bringing out any vaginal secretion that may be present; this could then be examined microscopically.

#### SUMMARY AND CONCLUSIONS.

Of all the cases seen, I should say, from the clinical side, that the very smallest number were truly gonorrheal, resembling the disease as met with in the adult. A definite history of contact infection, as by pervers (the infectionist theory of Pollock) or through attempts of rape, was obtained in only one case. In two others there was definitely the evidence of a ruptured hymen without such a history of assault. In the vast majority of cases the complications and sequelae of gonorrhea were entirely lacking. The absence of gonorrheal ophthalmia, of urethritis, of joint symptoms and of *peritoneal symptoms*, in spite of the apparent chronicity of the discharge, certainly makes one reflect that this condition in children is at least different from the gonorrhea of adults. It certainly does not have the virulence nor the tendency to cause metastatic foci as it does in the adult. In this connection Louise Pearce's<sup>7</sup> work on the comparison of adult and infant types of gonococci is both suggestive and significant. She found in working with strains of gonococci from adults and strains from children that, both in agglutination and complement-fixation experiments, these strains differed so uniformly that they could be distinguished as two distinct types corresponding to the clinical source of the strains. Her experimental material was derived from 6 cases of vaginitis in children, 3 cases of gonorrheal ophthalmia (a) neonatorum; (b) girl 18 years with vaginitis; and (c) boy 15 years with urethritis; and finally 8 cases of gonorrhea in adults.

*It is of the greatest significance to note that the strains of gonococci isolated from the three cases of ophthalmia are classed by Pearce with the adult type.* In the cases observed by me there was not a single instance of ophthalmia.

If the disease were really as prevalent as we have been led to suppose,\* we ought to see more dangerous sequelae later on in life. We ought to see more pyosalpinx and pelvic peritonitis in young girls. We know, however, that practically in every instance where such condition obtains in a young girl of 14 years and upward there is always a definite history of recent exposure, with all other signs and symptoms of a gonorrheal infection.

*That a true gonorrheal infection does occur in children cannot be denied; there have been enough reports where the gonococcus of Neisser was recovered from metastatic foci in the body joints,† eyes, etc., associating a gonorrheal*

vaginitis. The actual incidence of the latter in children is probably very small. My clinical experience coincides with that of V. Pirquet and V. Reuss, for example, who stated that they see in their very large clinical material only 5 or 6 cases yearly. *If the majority of children having vaginal discharge are infected with the gonococcus, it must in all probability be a different microorganism from that described by Neisser as occurring in adults.* Whether it is some other organism, however, can be established only by proper bacteriological and serological tests. Thus the well-recognized infectious vaginal catarrh which spreads through hospital wards may have some other bacteriological etiology than the gonococcus. Some other method of diagnostic control than that offered by smear examination must be available if we are to treat it intelligently and scientifically. I have found not only the greatest discrepancy between the clinical picture and the smear report, but in a series where two different bacteriologists made the examination there was the greatest contradiction in their reports on the same material examined. The bacteriologists were of unquestionable reputation, with the best facilities for bacteriological examination. While this difference of opinion is possible in any other laboratory test, in this work it adds considerably to the other difficulties in coping with the vaginitis problem.

From my experience with these cases I am led to the following conclusion:

To establish the diagnosis of *gonorrheal vaginitis* in children and infants, it is necessary to have: 1, A purulent discharge from the vagina. 2, The intracellular Gram-negative diplococcus of Neisser must be discovered in the pus cells (smears and cultures are facilitated by the endoscope). 3, This organism must further be grown on suitable culture media and properly identified as the gonococcus. 4, In case of doubt, complement-fixation tests and agglutination tests should also be resorted to. In the absence of these tests we are not justified in considering any vaginal discharge in children as gonorrheal, nor are we justified in treating it as such. *The smear examination, even by the Gram stain of secretion or discharge from the vagina, is unreliable and misleading, and hence valueless as a method of diagnosis.* The desideratum in the problem of vaginitis among children, therefore, is more complete and scientific bacteriological study, including animal inoculation.

† Of Holt's 26 cases of gonorrheal arthritis in children, 19 were in males and 7 in females. Of the females only four had vaginitis, although 273 cases of vaginitis were observed.

#### REFERENCES.

- <sup>1</sup> Archives of Pediatrics, xxxiii, p. 361, 1916.
- <sup>2</sup> Modern Hospital, May, 1914.
- <sup>3</sup> Triet and Kolmer: Studies in Gonococcus Vaginitis, etc. Archives of Pediatrics, November, 1916.
- <sup>4</sup> Barnett, Nathaniel: Vulvo-vaginitis in Young Children; Its Control and Successful Treatment, Archives of Pediatrics, September, 1918.

\* P. C. Jeans, quoted by Tausalg, found, out of a total of 262 girls over one year old coming to all branches of the dispensary of the Children's Hospital in a period of five months, 14, or 5.3%, were infected with gonorrheal vaginitis.

- \* Rubin, I. C., and Leopold, J. S.: *Journal of Diseases of Children*, January, 1913.  
 \* Vesico-vaginal Fistula in Child Eight Years Old. Removal of Hair Pin. Recovery. *American Journal Obstetrics*, etc., June, 1914.  
 \* *The Journal of Experimental Medicine*, April, 1915.

## THE PRIMARY LESION OF TUBERCULOSIS; ITS SIGNIFICANCE, DIAGNOSIS AND TREATMENT.\*

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In a lecture on tuberculosis to a group of American medical men in Vienna, I heard Prof. Hamburger state at the outset of his lecture that in order to understand adult tuberculosis one must study the tuberculosis of infancy. What he meant was that to understand the whole picture of tuberculosis it is necessary to grasp the meaning of primary tuberculosis; that tuberculosis is a disease similar to syphilis in that they are diseases with a primary lesion and primary stage whose symptoms and pathology are different from the later manifestations of the disease.

What was formerly known as the chronic glandular tuberculosis of infancy or what was meant when it was said that a baby might be infected with tuberculosis but not have the disease is now recognized as the primary stage of tuberculosis. It usually occurs in infancy or early life, but I believe that an individual, no matter what his age, must first have the primary lesion to be followed by later destructive types of the disease; and I feel sure that this is the teaching of recent investigators in tuberculosis. The primary lesion may lie dormant many years, when, under conditions suited for its breaking down it will spread and give rise to the pathological changes which have been taught as active tuberculosis or tuberculous disease. To say that a baby is infected but does not have a disease just because we may never have recognized the symptoms, is not tenable with modern pathology, especially as there remains true pathological tissue after infection. I agree that it does not give signs and symptoms recognizable as those of tuberculosis, but it does give symptoms of its own, and its importance is far more reaching in that it is the potential of the most serious malady of the human race. Granting its importance, I wish to bring to your consideration the primary lesion of tuberculosis, its significance, diagnosis, and treatment.

In order to illustrate to you what constitutes a primary lesion and how it is formed, I will describe an experiment shown me by Prof. Hamburger and which you may find more fully described in his work, "Die Tuberculose des Kindesalters." If a tuberculosis-free guinea-pig be scratched on one shoulder and inoculated in the scratch with a pure culture of tubercle bacilli, a

primary lesion will be started. The scratch with this small dose will show no change macroscopically for a week, when an infiltration will appear about the scratch. At the same time the axillary glands draining the region enlarge and ultimately form a mass of large discrete glands. Here is a primary lesion, the portal of entry, and the extension through the lymphatics to glands draining the region of the portal of entry. This represents what takes place no matter where the infection first enters; there is the primary focus and the enlargement of the adjacent glands. If the first infection is in the adenoids then there are post-cervical glands; if in the tonsil, anterior cervical glands; if in the lung, bronchial glands; if in the intestine, then mesenteric glands; and anywhere in a cut of the skin the glands draining the region will enlarge. The portal of entry in the human is usually not found except in the lung, where it is represented by a grayish area the size of a mustard seed or pea; but I feel sure that if it were possible to search minutely enough it might be found in other localities. The portal of entry and the mass of glands constitute the primary lesion. It is impossible to have the one without the other, consequently, they go together to make up the primary lesion. The primary lesion and its symptoms make the primary stage of tuberculosis.

The primary focus may be anywhere that the bacilli happen to locate, but naturally there are some places more accessible than others. The two most common places are the lungs and the intestines. Figures as to the relative proportion of the two regions vary with the locality in which the observer lives. If in a locality where the milk supply is not safeguarded against tuberculosis, there will be a larger proportion of primary intestinal tuberculosis than where the milk supply is from tested cattle; though I must say I think the region of the primary lesion is no criterion, whether the infection is bovine or human; though if intestinal it is presumptive evidence that the bacilli were carried in the food, probably milk. However, the milk must be accidentally infected during or after milking unless there is disease of the udder; for there is no evidence to prove that bacilli can pass through the uninfected udder or breast but that they are introduced from dust and dirt from the cow or from a tuberculous milk handler, and hence they may be human or bovine, but the chances are in favor of bovine. Other entry points are the adenoids, tonsils and skin. The adenoids and tonsils are not so common in infants as in older children. The skin must be broken, and though not relatively so common as the other portals, is not a negligible source, as there are many cases on record where primary infection occurred during the rite of circumcision.

By far the greater proportion of the infections are in the lungs, and each case of primary bronchial glands tuberculosis indicates a close relationship with an open case of tuberculosis.

\* Read before the Medical Association of Central New York, in Auburn, New York, on October 18, 1917.

We were formerly taught that it took a long exposure to a tuberculous individual to acquire tuberculosis. One breath or one drink of milk is sufficient. We now know that it does not take a long time to infect, and the older thought applies to the appearance of secondary tuberculosis due to continued exposure or to the breaking down of the primary lesion. The relationship must be close enough to get the sputum laden with bacilli directly by kissing, or by breathing in droplets of infected sputum thrown out by coughing, talking or sneezing; by inhalation of dust infected by such sputum; or by taking in infected food. This fact alone will explain why so many are infected in infancy and early childhood, for it is at this age that such relationship is established. They are handled and they creep about in the dust. Hence what was supposed to be a type of tuberculosis characteristic of infancy is merely the primary lesion acquired at the time when all the conditions are right.

If, as I say, the primary lesion is potential of trouble, it seems to presuppose that it is harmless and symptomless. Not at all so, for I am sure that in infancy, though it does not give symptoms ordinarily recognized as those of tuberculosis, it may give general symptoms of anemia, fever, indigestion with its resulting malnutrition and failure to gain, and I feel reasonably sure that it also gives such symptoms in older children. The symptoms are due to absorption of toxic products formed by the primary lesion and are consequently of a general character and not localizing. Such disturbance of the general health may be overcome and no permanent disability result; it is a part of the primary stage without any further demonstrable pathology in life than of the primary lesion. However, if these symptoms are not relieved by proper treatment, the tissues lose their resistance, the primary glands break down and the disease is spread.

Now to illustrate what may take place in an individual with a primary tuberculosis a second experiment on our already infected guinea-pig is of interest. Repeat the experiment on the other shoulder with a similar small dose of bacilli. The scratch will heal and later small glands appear in the axilla. Nothing more happens if the individual is in good condition or if the dose is not large. In other words, there is a certain amount of immunity to repeated small doses. There is some experimental evidence in animals to show that tissues differ in their resistance and consequently the number of bacilli necessary to set up secondary processes varies. This or other reasons make it possible for fewer organisms to set up secondary lesions in the lung than in the intestine. The point I wish to make is that there is a slight immunity which, if broken down, gives a chance of exacerbation in and spread from the primary lesion or for reinfection to start inflammatory processes. This immunity seems to be far less in the infant than later in life.

If this lowering of the resistance and spread from the primary lesion may be called the en-

dogenous cause of spread there is an exogenous one in that other infections draining into the same glands cause secondary breaking down and spread of bacilli which have been hiding there and which hide there throughout life ready to be spread. Hence the disastrous results after measles, pertussis, pneumonia, and bronchitis where there are preëxistent primary bronchial glands; or after diarrheas where there existed primary mesenteric glands.

Now to compare the primary and secondary lesions: The primary focus may remain apparently arrested; the secondary ulcerates; the primary glands are large and discrete; the secondary small, though there may be quite a mass of them. Hence tuberculous ulceration of the bowel, usually multiple, with small mesenteric glands, is secondary; tuberculous bronchopneumonia with small glands is secondary; a single intestinal ulcer with large glands is primary. To go further into secondary tuberculosis would lead us away from our subject, but let me say that secondary tuberculosis in infancy shows very little or no tendency to heal, whatever it may do in adults.

You may easily see that a baby whose tissues are sensitized by a primary lesion is in a highly precarious state to keep in a tuberculous surrounding, for breathing in or swallowing bacilli may set up a secondary process if his general condition is poor. This is a considerable danger, but curiously the spread of the disease almost always comes from the primary glands and the primary focus, if it remain, which break down on account of the lowered general resistance; or a new non-tuberculous infection into the same region starts up inflammation which softens the primary glands, and hence, from either cause or both together the softened glands dump bacilli into the surrounding tissues or into the blood or lymph. The spread may be to the tissues about the primary glands or primary focus, thus giving rise to the destructive hilus tuberculosis seen in infancy, to pneumonia about the primary focus, or to the peritonitis seen with *tabes mesentericus*. This has been called extension by contiguity. The primary glands may break down, ulcerate into a blood vessel, lymphatic, or into a bronchus. If the break is into a blood vessel the spread will give miliary tuberculosis of the various organs including the meninges; if into the lymphatics, spread to other glands; if into a bronchus, then by aspiration of the sputum into the smaller tubes, bronchopneumonia; by coughing, the sputum laden with bacilli may find lodging in the tonsil causing secondary cervical glands, and such sputum swallowed may give secondary ulceration of the intestine. Thus the spread is in one of four ways to the surrounding parts, by the blood, lymph, or sputum.

Now, in the diagnosis, if you bear in mind the characteristics of the primary lesion, that it is composed of a primary focus which is never found except in the lung and then only at autop-

sy, and of a mass of large discrete glands, then you may see that your diagnosis must rest upon finding such a mass of glands and that in primary tuberculosis you are not going to find any signs such as we have always been taught to look for as tuberculous, which are all secondary; consequently, the signs must vary with the locality involved. If the glands are situated in the neck they can be seen and palpated; if in the abdomen they may be palpated and are usually found in the right iliac fossa. In the chest, however, the glands are detected by signs and other methods which I will describe at greater length.

The history is significant only when there is evidence of direct exposure, but lack of such history means nothing. There is as much tuberculosis in children of non-tuberculous families, or rather negative family history, as where there is a definite history. This fact shows that it is easy to infect infants, that the chances for infection are too many, and that only a short chance exposure is necessary.

Primary tuberculosis may apparently run a symptomless course and be discovered only when doing a series of tuberculin tests or when trying to find the number infected in a family where there is an open case of tuberculosis. It seems to be true that the younger the individual when infected the greater the probability of symptoms from the primary lesion, and that the older children are the ones to run a course without symptoms. On the other hand, as the symptoms are due to absorption of toxins from the primary lesion it seems to me impossible to state that any case may not have had slight fever, indigestion or fail to gain properly at some time due to his primary tuberculosis, and such symptomless cases will be fewer the more diligently we search for primary tuberculosis. It seems to me far better to consider all tuberculosis either inactive or active rather than say that a baby may be infected but not have the disease of tuberculosis. Here lies the significance of the primary lesion; it is a disease process that may at any time light up.

The symptoms are of little help in the diagnosis for they do not attract the attention to the region involved. They are general in character, as slight fever, anemia, malnutrition, peevishness, indigestion, usually showing marked fat intolerance. Cough is an occasional symptom of primary bronchial glands, but I have a feeling that if there is the brassy cough and evidence of bronchial glands, that the process is already more than a primary one and that there is extension or that the glands are very large and caseous and in danger of spread.

I have said that in certain localities the glands may be palpated, but bear in mind that you are to feel a mass of large glands, not a large mass of small glands; for you may have secondary intestinal ulceration with numerous small mesenteric glands which together form a large mass, while the primary lesion is in the

bronchial glands. On the other hand, if the mesenteric glands are large, hard, discrete, you would have a right to conclude that there is a primary intestinal lesion with primary mesenteric glands even though there are signs of enlarged bronchial glands which, under those circumstances, may be due to a recent bronchopneumonia of non-tuberculous origin.

In the chest the glands cannot be palpated and we must resort to percussion, auscultation and x-ray. I think by far the most reliable information is gained by careful percussion, but every little detail in the technic must be observed. When percussing the chest for glands I prefer that the infant lie on a smooth, hard surface rather than have it held on the lap. I am speaking of primary tuberculosis so I leave out consideration of the examination of the lungs, for there will be nothing found there as the primary focus is too small to give signs. The infant should lie with the spine straight and when examining the back the arms should be held out at right angles to get the scapulae out of the way, thus baring the interscapular spaces. The percussion on the two sides must be symmetrical with relation to the sternum in front and to the vertebrae behind. When percussing for spinal dulness, that is dulness in the median line in the back, compare percussion over the spinous processes or over the spaces, not a process and a space, for the process will be duller than the space anyway. In front there will be dulness over the third space to the right of the sternum; the left side is masked by the normal dulness due to the great vessels and cannot be determined. This dulness in front is not to be confused with thymus dulness as there is no dulness high by the side of the sternum. In the back a spinal dulness below the third dorsal vertebra is suspicious, and if accompanied by dulness between the vertebrae and the scapula, that is interscapular dulness, is diagnostic of thickening at the root of the lung on that side. I think a moderately low spinal dulness may exist without interscapular dulness and is then of no importance. Interscapular dulness cannot exist without low spinal dulness and the two together are of the greatest importance. I think a diagnosis of bronchial glands is not justified unless there is interscapular dulness. There is slight dulness in the left interscapular space normally, consequently if both sides are of equal intensity there is a pathological dulness on the right. The left side must be distinctly dull to warrant a diagnosis of left-sided infiltration. Naturally, from what I have said of the primary lesion, the side in which the interscapular dulness is located points to the side of the primary focus.

By auscultation one tries to get the D'Espine sign, by which is meant the point on the spine going from above downward where the whispered voice or expiration changes from bronchial to vesicular in character. The loudness or harshness of the voice or expiration does not

show the sign but the bronchial character which may even be quite distant. In infants it is normally at the second dorsal vertebra and may be at the third without any demonstrable lesion at the hilus of the lung. In older children and adults the change takes place at the seventh cervical, but in any case I do not think it suggestive until it is down to the third or lower and then only diagnostic if backed up by low spinal and interscapular dulness.

The x-ray should be used whenever possible to confirm the physical findings. It is only confirmatory, for no one can say from a plate that a baby has tuberculosis. I feel sure that any case that will show on the plate a definite shadow at the lung root outside of the heart border will give to percussion low spinal dulness and interscapular dulness, and I would not be willing to condemn an individual on the x-ray plate alone. The evidence of percussion, auscultation and x-ray must all be used in making the diagnosis of enlarged bronchial glands.

These signs indicate only enlargement of the glands situated along the trachea, at the bifurcation of the trachea, or following the larger bronchi, all commonly designated as bronchial glands, but do not make out the case to be tuberculous. Before a diagnosis of tuberculosis can be made, all other causes of enlargement of the bronchial glands must be ruled out, as recent pneumonia or any acute or chronic process in the lung which will cause enlargement of the glands. However, if the history points to recent acute lung disease, the glands will soon disappear. If there are still signs in the lungs the case cannot be one of simple primary tuberculosis which gives no lung signs. The diagnosis where there are lung signs lies between secondary tuberculosis and something not tuberculosis or some acute process plus primary tuberculosis, and then only time and repeated examination will tell.

The examination of the sputum is of no assistance, as the primary lesion is a closed tuberculosis, and if bacilli are found it means secondary tuberculosis. For the same reason guinea-pig tests are impossible. The various tuberculin tests are of great assistance in determining if an individual is tuberculous, but they are reliable only if positive and then only indicate that there is tuberculosis present, but have no diagnostic value as to where the lesion is or what stage it is in. If the individual has only one mass of large glands and a positive tuberculin test then the chances are that that is the primary lesion. If there are several masses of glands, the test does not point to the primary glands, but you must find them by picking out the oldest and largest glands. A negative test, especially in infancy, means nothing, for there are many chances that the infant is not in the right condition to react and may react at one time and not at another. A baby with definite signs I should consider tuberculous and treat as such in spite of the tuberculin tests. I do not

intend to discount the value of the test but all the exact knowledge that it affords is that there is tuberculosis somewhere in the case and that is absolutely reliable, for there cannot be a positive tuberculin test where there is no tuberculosis. It does not indicate the location of the primary lesion nor the stage of the disease and I am still to be convinced that it has any bearing on the prognosis. The tests require too much interpretation to be of clinical value except as indicative of tuberculosis if positive.

Having established the diagnosis of primary tuberculosis or made a probable one, what should be done? It has been taught that such an infant has an infection with tuberculosis but not a disease and consequently there is nothing to be done. If a man has a typhoid, the walking type, would you let him run about eating anything he wanted and doing anything he wanted and take the chance of serious complications? That question is ridiculous but it is equal folly to neglect to look out for a lesion that has the pathology and possibilities of primary tuberculosis. Pathology shows that there is no danger from the primary lesion as it is, hence the treatment must be to keep the disease primary. From what I said about the causes of spread, the treatment must be directed to the maintenance of the general resistance above the point where the tissues can break down, to the prevention of reinfection from tuberculous surroundings, and to the prevention of new infection in the same region drained by the primary glands.

There are three essentials in treating the general symptoms of primary tuberculosis,—fresh air, well-regulated diet, and rest. Fresh air does not mean cold air and indeed it may mean very warm, fresh air; for coldness is not an indication of freshness. Regulation of diet to avoid any sign of indigestion; especially look out for fat indigestion, for infants and children with tuberculosis tolerate fat badly. The natural thing for a mother to do with a child not gaining is to increase the fat. Do not be afraid of low fats. The rest should be sufficient to establish and maintain good general condition and gain in weight even to the point of demanding absolute bed treatment. I have kept young infants flat in bed an entire year before gaining the desired improvement.

As for reinfection from open cases, so long as the infant is in good condition the danger is not great, as there is a certain amount of immunity to small doses. The danger arises when the tissues are non-resistant and a new lot of organisms are breathed in or swallowed and then set up secondary changes. That danger to a poorly nourished child is, I think, considerable. The difficulties encountered in trying to remove such a child from the tuberculous atmosphere are probably insurmountable in most cases, hence the greater need of good care.

The third preventive measure in the spread of the primary lesion—protection from other in-







Comparing the *highest* lipid values for the same extreme B. S. groups, one finds the expected higher lipid level with the highest B.S., and by a slightly greater difference than in the last paragraph.

#### CORPUSCLE PER CENT. OF BLOOD.

The normal has been stated as 43 for men<sup>1</sup>; for women also as 43%.<sup>2</sup>

<sup>1</sup> Keith, N. M., Rowntree, L. G., and Geraghty, J. T.: A Method for the Determination of Plasma and Blood Volume, Arch. Int. Med., October, 1915, xvi, pp. 547-576.

<sup>2</sup> Haldane, J., and Smith, J. L.: The Mass and Oxygen Capacity of the Blood in Man, Journ. Physiol., 1900, xxv, p. 331.

<sup>3</sup> Miller, J. R., Keith, N. M., and Rowntree, L. G.: Plasma and Blood Volume in Pregnancy, Jour. A.M.A., Aug. 28, 1915, lxx, pp. 779-782.

Miller, Keith and Rowntree conclude that "all but one were below the normal of 43%, the average being 35.8% in 12 cases before labor." That this "normal" value may be a trifle high is suggested by an average made from their table of 25 observations, giving 38%; also by an average of 38% made from the seven normal women in the series of 21 normal persons whose lipid averages have been cited.<sup>7</sup> In the latter series the average for the two sexes together is approximately 41%.

The diabetic average for this series is 39%. The diabetic range is 24%-53% vs. 33%-49% in Keith's table of normals. See Table XXVI, which omits such bloods as were clotted, had stood, had no per cent. recorded, or had no total-fat done. The extreme percentages are not consistently paralleled by the lipoids, but

these tend to increase when the corpuscle per cent. is abnormal, whether high or low. In other words, the total-fat average for each per cent. does not obviously rise in proportion to the variation $\pm$  of the per cent. from normal. If, however, a broad normal group is made to include a 10% $\pm$  variation from 41%, i.e., 4 points $\pm$ , and then the total-fat values for that group are averaged, the lipid rise becomes obvious; about 60% increase, when corpuscles run either high or low.

TABLE XXVI.

RELATION OF CORPUSCLE PERCENTAGE TO LIPOIDS.

Corpuscles %	No. of specimens	Av. total-fat in W. B.	No. of specimens	Av. total-fat in W. B.
24	1	2.59		
25	0	0		
26	0	0		
27	0	0		
28	0	0		
29	1	2.94		
30	2	1.29		
31	1	0.81		
32	7	2.50		
33	3	2.04		
34	3	1.16		
35	6	1.05		
36	7	0.89		
37	5	1.32	31	1.59
38	9	0.99		
39	10	1.28		
40	14	1.02		
41	7	0.83		
42	12	0.95		
43	6	0.89		
44	5	0.93		
45	1	0.72	71	1.02
46	2	2.11		
47	1	0.78		
48	2	1.16		
49	5	2.28		
50	0	0		
51	0	0		
52	1	1.89		
53	1	1.00	12	1.74

TABLE XXVII.

RELATION OF LACTESCENCE TO HYPERLIPEMIA.

Plasma Density	No. of specimens	Total-fat in W.B., Av.	No. of spec.	Total-fat in W.B., Av.	No. of spec. becoming cloudy after 24 hrs.	Total-fat, Av.
1 Clear	80	0.94			6	
2 Opalescent, Almost clear	2	1.90			0	
3 Very faintly cloudy	4	1.41			1	
4 Faintly cloudy, Slightly cloudy	14	0.96	I		2	
5 Somewhat cloudy	2	1.14			0	
6 Cloudy	9	1.15			2	
7 Very cloudy, Milky	3	1.00	114	1.00	0	11 0.08
8 Somewhat milky	4	2.71			0	
9 Quite milky, Milky but translucent	1	2.59			0	
10 Milky	1	2.94	II		0	
11 Thick, milky, Creamy	1	3.62	7	2.86	0	
12 Thick, creamy	2	9.23	2	9.23	0	

## CLOUDY PLASMA.

That increasing opacity of the plasma indicates increase of the fatty substances is an old belief. This was here proportional with the greater degrees of density, but with the lesser not at all so. In Table XXVII the total-fat average shows no significant increase through the 7 groups "clear" to "muddy or very cloudy"; and jumps up only when the plasma becomes "somewhat milky."

The term "lipemia" (Greek  $\lambda\eta\eta$ , with a short *i*, by the way) has been avoided in this paper, because of its looseness, meaning to some observers gross creaminess, to others excess of lipoids micro-chemically.

Far the most appropriate name for the latter would seem to be "hyperlipemia," analogous to the familiar hyperglycemia; while for gross milkiness to the naked eye we may well use Widal's "lactescence." The density, or degree of lactescence, of each plasma was in this series described in 12 ways. The fat by Bloor's method in all specimens falling in each group are averaged in Table XXVII.

It shows the uselessness of trying by the cloudiness to predict the lipid level. It is true that one may group these 12 into 3 broad divisions of some significance, as follows:

TABLE XXVIII.

LACTESCENCE	HYPERLIPEMIA
I. Clear to very cloudy ....	Total-fat about 1%
II. Somewhat milky to thick milky .....	Total-fat about 3%
III. Thick creamy .....	Total-fat about 9%

But the significance of these is lessened when we reflect:

1. That 93% of the series of bloods were in Group I.
2. That in that group, according to Table XXVIII, the gross appearance foretold nothing, save possibly that "clear" plasmas average low.
3. That this low average is misleading, since there are clear plasmas with high lipoids, *e.g.*, Blood No. 141 — Hist. No. 786 = 2.70%.
4. Of the cloudier plasmas in Group II, furthermore, it is easy to find values lower than many in Group I, *e.g.*, in "9, Quite milky," is Blood No. 537 = only 1.39%.

This agrees with the old observation of Widal, Weill and Laudat that "there is no necessary relation between the degrees of lipemia and lactescence."

Widal, F., Weill, A., and Laudat, M.: *Semaine Méd.*, 1912, xxxii, 529.

Bloor has remarked on the clouding up of a clear plasma on standing at room temperature for 24 hours.<sup>8</sup> This has occurred 11 times in the present series.

In these cases the average total-fat was only 0.88, compared with 1.00 for the whole 114 in the broad division which included the 11. Samples of this 24-hour cloudy plasma were worked up in only 2 of these 11 bloods. Table XXIX shows that total-fat and total-fatty-acid tend to rise, lecithin and cholesterol to fall. More figures are needed.

TABLE XXIX.

INFLUENCE OF STANDING 24-48 HOURS.					
SPEC. NO.		TOT.-FAT	T. F. A.	L.	C.
161	Before standing .....	0.93	0.68	0.25 <sup>D</sup>	0.25
	After standing 24 hours	0.98	0.73	0.07 <sup>D</sup>	0.25
157	Before .....	3.25	2.67	0.46 <sup>D</sup>	0.58
	After .....	3.53	3.11	0.42 <sup>D</sup>	0.55

## INFLUENCE OF THE VARIOUS FACTORS IN INDIVIDUAL PATIENTS.

The same influences that have been studied in grouped patients may be studied in the different bloods of each individual patient. There were 18 persons who each supplied 10 to 2 specimens, but want of certain determinations on some of these specimens reduced to 14 the number of patients presented in Table XXX. For each person the total-fat in whole-blood on the day after the *maximal*, *e.g.*, calories, was picked out of Table I and also on the day after the *minimal* calories, etc. The former was then found by calculation to exceed the latter by 9% of the latter's value. When a lipid value after the maximal calories was *less* than after the minimal it was marked minus. This occurred disconcertingly often, and therefore only tentative conclusions seem justifiable. These are presented in Table XXX, with the most definite first.

Comparing that specimen of a patient's blood which showed his highest *blood sugar* with that showing his lowest, the total-fat in the former averaged 40% higher than the total-fat in the latter.

Comparing that specimen of a patient's blood taken at the end of the 24 hours showing his highest *carbohydrate balance* with that taken at the end of the 24 hours showing his lowest, the total-fat in the former averaged 11% lower than the total-fat in the latter.

Comparing that specimen of a patient's blood taken at the end of the 24 hours with the highest *dietary fat* with that taken at the end of the 24 hours with the lowest, the total-fat in the former averaged 5% higher than the total-fat in the latter.

Comparing highest *calories* with lowest, the total-fat after the former averaged 6% higher than after the latter.

TABLE XXX.

INFLUENCE OF BLOOD-SUGAR, CARBOHYDRATE BALANCE,  
DIETARY FAT, AND CALORIES.

HISTORY No.	No. OF SPEC.	B. S.	CH. BAL.	DIET. FAT	CAL.
1233	10	192	11	9	1
786	8	225	71	16	20
610	5	9	9	51	18
1070	4	8	23	—	19
1065	4	—	7	7	7
1213	4	34	5	3	92
1196	3	28	28	22	22
914	3	72	33	33	33
1160	2	11	11	—	11
1227	2	35	—	—	—
1245	2	19	—	—	—
942	2	31	—	—	—
Total	12	579	48	86	137
Difference	12	482	102	31	51
Average		40	11	5	6

Any attempt to discuss the relation of these various observations to contemporary views of general lipid metabolism in diabetes would be superfluous, in view of the exhaustive and recent statements of Bloor, of Allen, and of Joslin.

## CLINICAL SEVERITY.

A further study of the specimens may be made according to clinical severity. Dr. Joslin has been kind enough to make this classification, presented in the Basal Table, beginning with the mildest at the top of the list. With many specimens it was impossible to do this more than approximately, but certainly the three main groups are accurate from a bedside viewpoint, combined with a knowledge of the condition of the urine, the acidosis and the blood sugar. The mild cases are those with a carbohydrate tolerance of 50 grams or more, although occasionally they would go below that. The severe cases, on the other hand, were those which had at some time a carbohydrate balance of 10 grams or less, though they often were above that level. When these three groups are each averaged, as in Table XXXI, it is seen that there is a progressive rise in the columns for Bloor's fat-method, total-fatty-acid, glycerides, and total-lipoids; but in lecithin and cholesterol there is very little difference between the mild group and the moderate group, and the rise is marked only in the severe group.

If the clinically mild cases are now subdivided into those with renal involvement and those without, it will be seen that the total-fatty-acid

TABLE XXXI.

## INFLUENCE OF CLINICAL SEVERITY.

No. OF BLOODS	TOTAL-FAT	TOTAL FATTY ACIDS		L.		C.		GLYCERIDES		TOTAL LIPIDS	
		W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.	W. B.	Pl.
Mild	32	0.83	0.90	0.59	0.64	0.32	0.24	0.24	0.26	0.24	0.26
Moderate	37	0.91	1.06	0.65	0.75	0.33	0.28	0.26	0.30	0.26	0.30
Severe	55	1.41	1.80	1.01	1.28	0.40	0.40	0.41	0.51	0.41	0.51
Mild { with nephritis	12	0.87	0.93	0.63	0.63	0.32	0.24	0.24	0.26	0.24	0.26
without nephritis.	20	0.86	0.88	0.54	0.63	0.32	0.24	0.25	0.25	0.25	0.25
Severe { with acidosis	21	1.32	1.66	0.99	1.23	0.39	0.38	0.33	0.43	0.33	0.43
without acidosis	34	1.49	1.87	1.02	1.31	0.41	0.41	0.46	0.57	0.46	0.57

in the whole blood and the total-lipoids in the plasma are slightly higher in the nephritis group, as might be expected. That this difference is so slight, and that it appears in so few columns, is, however, natural enough. For, although "renal block" holds back sugar markedly, it can hardly "retain" fat when fat so seldom gets through. In the scanty literature on urinary lipoids are found reports varying from only 0.0002% fatty-acid to 0.44 grams ether-extract per 24 hours.

Hybbinette, S.: Ueber die Gegenwart von nicht fluchtige fette Säuren im normalen Menschenharn, Skand. Arch. für Physiol., 1897, vii, pp. 380-384.  
Reale, E.: Ausscheidung der Fette durch den Harn, Riv. di Clin. e Therap., 1897, No. 4; also reviewed in Malays Jahresbericht über die Fortschritte der Thierchemie, 1897, xxvii, p. 43.

If the clinically severe cases are subdivided into those with acidosis and those without, it will be seen that the lipoids run higher in the latter group, right across the page. This is surprising, because a similar comparison already made between the specimens with acidosis and those without in the entire 131 specimens, instead of in these 53, shows the reverse, namely, the higher lipoids in the specimens *with* acidosis, as, indeed, would be expected.

#### CONCLUSIONS.

1. The most satisfactory *single determination* for following a diabetic patient is Bloor's fat-method (total-fat) on whole blood.
2. There is a lipid *threshold*, by Bloor's method about 0.7%, analogous to the glucose threshold of 0.1%.
3. A normal Bloor-fat-value was found only 9 times in 124 bloods, *i.e.*, only about 7.0% of diabetics come inside the threshold of the normal range.
4. The lipid increases in diabetes are *most marked* in:
  - I. Glycerides, then:
  - II. Total-fatty-acid,
  - III. Cholesterol,
  - IV. Phosphatides.
5. The increase of cholesterol *beside* the glycerides seems indeed pathognomonic of the long-standing hyperlipemia of diabetes, contrasted with the acute hyperlipemia of over-feeding which has been shown by Bloor to consist of only increased fatty acid.
6. The *maximal* total-lipoid value of this series was 16.3%.
7. The *plasma* exhibited much greater increase of lipoids than the corpuscles.
8. After ether *anesthesia* in one case, total-fatty-acid was increased, followed by a fall below that patient's level before anesthesia. Phosphatide and cholesterol were unchanged.
9. *Sex*, in diabetes, makes no significant difference in lipid level.
10. The greater the *duration*, the lower the lipoids.
11. The higher the lipoids, the more unfavorable is the *prognosis*. The danger of deranged fat-metabolism: acidosis and coma!
12. *Overweight* at the time blood is taken is accompanied by *slightly* high lipoids.
13. *Underweight* at the time blood is taken is accompanied by *markedly* high lipoids.
14. The greater the *loss of weight*, *i.e.*, from maximal weight (presumably onset) to weight at time the last blood was taken, however, the *lower* the lipoids, compared with those patients whose weight-loss has been less.
15. High *dietary* fat is only roughly followed by higher lipoids.
16. With *acidosis* the lipoids are above the level in diabetes without acidosis. The rise is about twice as great in *moderate* as in severe

acidosis. This paradox may be related to the frequent finding that acidosis is most marked in acute cases, which presumably have not yet had time to pile up excess fat.

17. With increasing *carbohydrate balance* the lipoids decrease.

18. *Hyperglycemia* is only roughly accompanied by hyperlipemia. The latter, furthermore, runs much more closely parallel to the patient's general condition, and promises, therefore, to displace blood sugar from its present position as an index to prognosis and treatment.

19. When lipoids are high, the *percentage of corpuscles* in whole blood is apt to be either abnormally low or abnormally high. The general diabetic average is below normal.

20. The term "lipemia" is loose and therefore undesirable. *Hyperlipemia* (supernormal lipoids) is not paralleled by *lactescence* (cloudy plasma), except when extreme. When, however, the lipoids are only moderately supernormal (as is true in 93% of the specimens in this series), then the plasma cloudiness is by no means proportional. This series shows clear plasmas, which, when tested, were found hyperlipemic, and cloudy plasmas which were found to have normal lipoids.

#### Medical Progress.

#### PROGRESS IN PEDIATRICS. A RÉSUMÉ OF THE LITERATURE OF INFANTILE SCURVY DURING THE PAST FIVE YEARS.

BY JOHN LOVETT MORSE, A.M., M.D., BOSTON.

##### Symptomatology.

HESS (*Jour. Amer. Med. Assn.*, 1915, Vol. lxx, p, 1003) in 1915 called attention to enlargement of the heart, especially to the right, in infantile scurvy. This enlargement is demonstrable both by percussion and by the roentgen ray. Necropsies show that the enlargement is sometimes due to dilatation and sometimes to hypertrophy, but more often to dilatation. The enlargement is chiefly of the right ventricle. The rate of the pulse is also increased.

He also states that subcutaneous edema is one of the most constant phenomena of infantile scurvy. It deserves special mention because it appears in a peculiar clinical form and is frequently one of the earliest indications of threatening scurvy. It appears first in the eyelids, especially the upper. It often manifests itself as a firm edema over the lower end of the tibia, infiltrating the skin, and is easily overlooked, as it does not pit on pressure. The edema is due to a nutritional disturbance of the smaller vessels and may also infiltrate the muscles

When this occurs in the thigh and causes swelling, it may be mistaken for subperiosteal hemorrhage.

He believes that the nervous system is also involved, because of the superficial tenderness in the extremities, the exaggeration of the knee-jerks and a neuro-edema of the optic discs, which are present in many cases.

In the course of his studies of a series of cases of scurvy at the New York Hebrew Infant Asylum Hess also found (*Amer. Jour. Dis. of Children*, 1916, Vol. xii, p. 152) that growth, in both length and weight, is markedly affected in the development of infantile scurvy. There is a cessation of growth, and a stationary plane is maintained for weeks or months. Super-growth occurs when an antiscorbutic is added to the food. The cessation of growth in length shows a much greater disturbance of metabolism and nutrition than does that in weight, because simple malnutrition does not affect this function either in infants or young animals.

In a still more recent paper Hess (*Jour. Amer. Med. Assn.*, 1917, Vol. lxviii, p. 235) describes a cardiorespiratory syndrome, which often develops early. The pulse and respiration are decidedly increased in rate, but there is no discomfort. There is polypnea rather than dyspnea. Cardiographic tracings show a simple tachycardia, with at times an exceptionally tall T-wave. The fact that the rate of the respiration is increased, as well as that of the pulse, shows that the symptoms cannot be due to an alteration in the heart muscle. They must be due to a disturbance of the nervous mechanism controlling this dual symptom, probably to an involvement of the pneumogastric nerve.

He also emphasizes the fact that scurvy presents many symptoms before the development of the florid stage. He describes three stages of scurvy: the latent, the subacute and the florid. The symptoms of the latent stage are stationary weight, pallor, anorexia, edema, exaggerated knee-jerks and the cardio-respiratory syndrome. In the subacute stage the symptoms of the latent stage are more marked, and enlargement of heart, irritability, slight redness of the gums and slight tenderness of the extremities develop, while the urine often contains a little albumen and blood. The symptoms of the florid stage are of the well-known hemorrhagic type with which all are familiar. The latent and subacute stages often pass unrecognized and are cured by the accidental administration of some antiscorbutic before the florid develops.

#### Pathology.

Hess and Fish (*Amer. Jour. Dis. of Children*, 1914, Vol. viii, p. 385) have recently made a study of the blood in this disease to determine the cause of the hemorrhages. They found that the clotting power of the blood in scurvy was, as a rule, slightly diminished. This diminution was not, however, constant, and cannot, there-

fore, be regarded as an essential manifestation of the disease or sufficient to account for the hemorrhagic tendency so characteristic of it. They found that there was no deficiency of calcium or blood platelets and no excess of anti-thrombin. They then studied the blood vessels by means of what they term the "capillary resistance test" and found that there was a weakness of the vessel walls in scurvy. This weakness is also present in other conditions than scurvy and is, therefore, not pathognomonic of it. It seems evident from their work, however, that the hemorrhagic tendency in scurvy is due to a weakness of the vessel wall rather than any change in the blood.

Nobécourt, Tixier and Maillet (*Archiv. d. Méd. d. Enfants*, 1913, Vol. xvi, p. 241) made a study of the blood in two cases and found anemia with leukocytosis. There was no rule evident, however, as to the relative proportions of the different forms of white cells. They call attention to a myeloid reaction of the blood, shown by the presence of both basophilic and neutrophilic myelocytes, which they attribute to an intense, plastic medullary reaction.

Bahrdt and Edelstein (*Ztschr. f. Kinderheilk.*, 1913, Vol. ix, p. 415, and 1914, Vol. x, p. 352) analyzed the organs of an eight-months-old baby, dead of scurvy, which showed no evidences of rickets. The ash of the bones was much less than normal. They contained from one-fifth to one-third of the normal amount of calcium, and there was a corresponding diminution in the phosphorus. The sodium and potassium were somewhat increased. There was also a diminution in the amount of calcium in the muscles. The salts in the other organs were apparently normal.

#### Etiology.

Lane-Clayton (Reports to the Local Government Board on Public Health, 1912, New Series, No. 63) gave a careful review of the literature regarding the effect of the heating of milk on the production of infantile scurvy in 1912. Morse (*BOSTON MEDICAL AND SURGICAL JOURNAL*, 1914, Vol. clxx, p. 504, and *Trans. Amer. Ped. Soc.*, 1914, Vol. xxvi, p. 61) called attention to the rapid increase in the number of cases of infantile scurvy treated in the Out-patient Department of the Boston Children's Hospital during the preceding six years, and the parallelism of this increase with that in the pasteurization of milk in Boston during this period. He did not claim that the pasteurization of the milk was the cause of the increase, but merely called attention to these figures as suggesting that it might be, and that it might, at last, play a part in the etiology of scurvy. In former years most of the babies which developed scurvy were fed on proprietary foods. In recent years the heating of foods prepared with milk was the most constant factor. Hess and Fish (*Amer. Jour. Dis. of Children*, 1914, Vol. viii, p. 385) stated in 1914 that during the

past three years a considerable number of cases of scurvy had developed at the New York Hebrew Infant Asylum in babies fed on pasteurized milk. In 1912, when the first cases were noted, the food was heated at 165° F. for twenty minutes. At this time several cases developed, owing to the fact that through an oversight orange juice was not given. Since then the milk has been heated at 145° F. for thirty minutes. Nevertheless, several cases of scurvy developed on this diet, orange juice having been omitted for experimental purposes. Others did not develop scurvy, although on the same diet. He concluded, therefore, that the pasteurized milk was not the sole factor in the production of the disease. That the pasteurization of the milk played an important part was shown, however, by the recovery of the babies when the pasteurization was stopped, the food otherwise remaining the same. Single cases of scurvy developing in babies fed on pasteurized or boiled milk have also been reported by several observers.

Hess and Fish (*loc. cit.*) state that their experience shows that the infectious diseases do not play an essential rôle in the production of infantile scurvy. They also state that almost all of the babies that developed scurvy showed evidences of the "exudative diathesis." The association was so evident that they have no hesitation in considering that there is a close inter-relationship between the two conditions. They believe that the "exudative diathesis" predisposes to the development of scurvy.

Talbot and Peterson, and Dodd, in their articles in THE BOSTON MEDICAL AND SURGICAL JOURNAL in 1913 (Vol. clxix, pp. 232 and 237) reviewed the literature of experimental scurvy in animals up to that time. Moore and Jackson (*Jour. Infec. Dis.*, 1916, Vol. xix, p. 478, and *Jour. Amer. Med. Assn.*, 1916, Vol. lxvii, 1931) have since then corroborated the findings of other observers, that inanition does not produce scurvy. They also found that cow's milk in any form, whether boiled, pasteurized or raw, not only does not cure scurvy in guinea pigs, but actually causes it. Condensed milk and mixtures of casein and water also caused it. So did Horlick's Malted Milk, Nestle's Food and Mellin's Food. The presence or absence of milk in these foods apparently made no difference. Goat's milk, however, did not cause it. They also determined by experiments that the lactose in milk is not the cause of scurvy in guinea pigs and that scurvy is not due to a lack of lime salts. They call attention to the facts that a diet which is sufficient for growth and maintenance in one species may be adequate for another, sufficient for maintenance in another, and produce one of the deficiency diseases in a third; and that conclusions based on dietary experiments on one species of animals can be applied only to that species. They state that their results show nothing to contradict the belief that milk carries both the fat-soluble and the water-soluble vitamins, but merely show

that milk in every form lacks something which is necessary to the guinea pig.

Funk has recently called attention in his book ("*Die Vitamine*," etc., Wiesbaden: J. F. Bergman, 1914) to the significance of the so-called vitamins in physiology and pathology, especially in relation to the etiology of what he calls the "avitaminoses," namely, beriberi, scorbutus, pellagra and rickets. He believes, and advances strong evidence to prove, that these diseases are due to the absence of certain vital substances in the food, that is, the vitamins. He shows from his own work and that of others that milk contains a considerable number of these anti-scorbutic substances as well as a substance which materially favors the growth of young animals. The development of scurvy in infants taking foods which contain no milk may be explained, therefore, by assuming that these foods do not contain the essential vitamins which milk does contain. The vitamins are, in general, very sensitive to heat. Those in milk are relatively stable. They are, however, partly destroyed by heating milk for a short time, and totally destroyed by long heating or sterilization. The development of scurvy in babies taking heated milk, and the greater frequency of the disease when the food is boiled or sterilized than when it is pasteurized, may be explained by assuming that the vitamins are partly or wholly destroyed by the heating, the destruction being more or less complete, according to the degree and duration of the heating. Scurvy sometimes develops, however, in babies taking raw milk, or even in those that are on the breast. His explanation of the development of scurvy on a diet of raw milk is that in such instances the milk is deficient in vitamins. In support of this explanation he brings forward evidence to show that the amount of the vitamins in the milk varies with the amount of vitamins in the food of the cows. An example of the influence of the food of the cows upon the amount of vitamins in the milk is the fact that their milk contains less vitamins in the winter, when they are eating dry food, than in the summer, when they are eating green food. The development of scurvy in infants on the breast may be explained in a similar way. He calls attention to the fact, moreover, that the vitamins are diminished in the milk of women who are underfed.

Hess (*Jour. Amer. Med. Assn.*, 1915, Vol. lxy, p. 1003) calls attention to the fact that enlargement of the heart, edema and nerve degeneration, which occur in scurvy, are prominent symptoms in beriberi, which is, without question, a deficiency disease, and considers it a strong argument that scurvy is also a member of this group. The improvement of babies with scurvy when wheat middlings are added to the diet he considers further proof.

McCollum and Davis (*Jour. Biol. Chem.*, 1915, Vol. xxiii, p. 181) concluded, from their studies of rats which failed to grow and live on

diets composed of purified food elements, that there were lacking in such food mixtures two essential substances or groups of substances. McCollum and Kennedy (*Jour. Biol. Chem.*, 1916, Vol. xxiv, p. 491) think that the term "vitamins" does not accurately describe these substances, and propose the terms "fat-soluble A" and "water-soluble B" for them. The first is found in abundance in butter-fat and egg-fat, and the latter in the leaves of plants, but only to a small amount in their seeds.

McCollum and Pitz (*Jour. Biol. Chem.*, 1917, Vol. xxxi, p. 229) found, as did Jackson and Moore (*Jour. Infec. Dis.*, 1916, Vol. xix, p. 478, and *Jour. Amer. Med. Assn.*, 1916, Vol. lxvii, p. 1931), that the addition of milk to a diet of oats did not prevent the development of scurvy in guinea pigs, and conclude, therefore, that the lack of "fat-soluble A" cannot be the cause of scurvy. They also conclude, from a series of experiments on rats, that the "water-soluble B" must have been present in the oats. Therefore, they believe that scurvy in the guinea pig cannot be due to a lack of any specific substance of this class. Consequently they conclude that scurvy is not a deficiency disease in the sense in which the term has been recently used.

They found that in guinea pigs which died of scurvy on a diet of oats and milk, the stomach, small intestines and lower colon were empty, while the cecum was distended with putrefying feces. The cecum of the guinea pig is very large and delicate. They argue, therefore, as follows:

The guinea pig can thrive only on a diet which leads to the formation of bulky and easily eliminable feces. Diets such as oats do harm only in that they form pasty feces, which cannot be passed out of the delicate cecum. Putrefaction occurs, which injures the cecal wall, which allows the passage of bacteria or toxins, which by their action on the walls of the capillaries produce the characteristic symptoms of scurvy. They found, further, that the addition of laxatives to the food which produced scurvy prevented or delayed its development. They believe that orange juice does good simply because of its laxative action. They do not go so far as to claim that the cause of scurvy in infancy is colonic stasis, with the absorption of toxins or bacteria, but think that their experiments lend support to this belief. The chief objections to their arguments are that conclusions based on dietary experiments in one species of animals cannot be applied to others, or those on animals to man, that the infantile cecum is not especially large or delicate, and that laxatives do not cure scurvy in infants.

Jackson and Moody (*Jour. Infec. Dis.*, 1916, Vol. xix, p. 511) carried on some experiments to determine whether certain small stained bodies which were seen in the sections of the scorbutic lesions of the guinea pigs studied by Jackson and Moore (*loc. cit.*) were bacteria.

They isolated a diplococcus of low virulence, with a tendency to form chains and to produce green on blood agar, from the crushed tissues of scorbutic lesions. Pure strains of these organisms, when introduced into the circulation of guinea pigs and rabbits living under ordinary conditions and taking suitable diets, gave rise to hemorrhagic lesions in the bones, joints, muscles, lymph glands or gums. Bacteria resembling these organisms were frequently seen in the microscopic sections of the scorbutic lesions. Jackson and Moore (*loc. cit.*) found, however, that cultures from the heart's blood of guinea pigs ill with scurvy produced by a milk diet were sterile, and that the passage of blood from these animals to normal animals did not produce the disease. Furthermore, guinea pigs fed on broth cultures of hemolytic and green-growing streptococci did not develop any signs of scurvy. Jackson and Moody refrain from drawing any definite conclusions as to the etiological relations of the organisms which they found to scurvy. McCollum and Pitz (*loc. cit.*), however, use their results as strong arguments in favor of their own conception as to the etiology of scurvy.

#### Treatment.

Hess and Fish (*Amer. Jour. Dis. Children*, 1914, Vol. viii, p. 385) found, as have others, that the boiling of orange juice for five or ten minutes does not destroy its antiscorbutic qualities. They also found that the juice of orange peel is as efficacious as orange juice, and suggest that on account of its cheapness it be used instead of orange juice. They prepared the juice by adding one ounce of finely-grated orange peel to two ounces of water and sweetening it. They found that the administration of small amounts of cooked vegetables, mostly in the form of carrots, did not prevent the development of scurvy. Freise (*Monatschr. f. Kinderheilk.*, 1914, Vol. xii, p. 687), however, cured a case of infantile scurvy by the use of an alcoholic extract of beets, the diet remaining otherwise the same. Hess and Fish (*loc. cit.*) also obtained good results with potato, boiled and mashed. Potato flour, however, had no antiscorbutic action. They recommend the use of potato water, made by adding one tablespoonful of boiled and mashed potato to a pint of water, in place of barley or other cereal waters. The potato water is inexpensive, the starch in it has the same colloidal action as that in the cereal waters, and it acts as an antiscorbutic, which the others do not. They found, as have others, that cod-liver oil and olive oil neither cure nor prevent the development of scurvy.

Hess (*Jour. Amer. Med. Assn.*, 1915, Vol. lxv, p. 1003) tried adding wheat middlings to the food on account of the similarity of many of the symptoms of scurvy to those of beriberi. They had a slight, but, compared with orange juice and potato, unimportant antiscorbutic action. He also gave wheat germ both as a



cereal and as a watery extract (*Amer. Jour. Dis. of Children*, 1917, Vol. xiii, p. 98). They had some antiscorbutic power, but not enough to make them of value from either a practical or clinical standpoint. He also tried autolyzed yeast and a desiccated yeast powder, because of the resemblance between the symptoms of scurvy and beriberi. Yeast proved to be of no value, however, either as a prophylactic or curative agent, but showed itself to be a stimulant to growth.

Rueck (*N. Y. Med. Record*, 1917, Vol. xci, p. 152) treated a very marked case of scurvy, with bleeding gums and marked anorexia, by two transfusions of human blood. The bleeding stopped and the appetite improved. He thinks that the blood served as a food in itself, helped to digest the food which the baby took and stimulated the hematogenetic centers to assume their normal functions. He also gave the baby modified milk, but does not state its composition, or whether it was given raw or heated. He began to give orange juice ten days after the first transfusion.

Since this article was written Hess has published another paper (*Amer. Jour. Dis. of Children*, 1917, Vol. xiv, p. 337) in which he concludes from a further study of the records of the cases on which he based his previous papers that aging of the milk seemed to play a greater rôle in the production of scurvy than heating, whether the milk was pasteurized or raised to the boiling point. He states that even raw milk on aging loses its antiscorbutic properties. In this paper he revises most of the opinions and conclusions given in his previous papers, and states that infantile scurvy is not a simple dietary disease but an intestinal intoxication or an autointoxication due to the overgrowth of harmful bacteria in the intestine. He states that it is the product of an unbalanced flora which is no longer controlled by a proper dietary. He thinks that the kidneys play a considerable rôle in infantile scurvy, and that its clinical course depends to some extent on the activity of their functions, toxins being eliminated by this route. He apparently now believes that the curative action of orange juice is due to its influence on the intestinal flora and its diuretic effect. His change of mind is seemingly largely due to the work of Jackson and McCollum and their associates, which has been cited in the previous paragraphs. In the reviewer's opinion his arguments are unconvincing and his conclusions not justified by the data on which they are based.

**MEDICAL BEQUESTS.**—The will of the late Mrs. Charles H. Colburn, of Milford, Mass., who died recently in Paris, was filed at Worcester, Mass., on Jan. 24. It contains a bequest of \$20,000 to the Milford Hospital, and establishes a fund of \$100,000 at the Harvard Medical School for research in tuberculosis.

## Book Reviews.

**Kirk's Handbook of Physiology.** With American Revision. By CHARLES W. GREENE, A.M., Ph.D. New York: William Wood & Company. 1917.

This revision of a well-known physiology leaves the book still in that group of texts which present the subject from the structural point of view. Each division is introduced by extensive and well illustrated histological accounts of the tissues involved. There is no doubt that such presentation is necessary for elementary teaching, but in medical school physiology and for graduate reference, it is of very questionable value, since the reader in both these instances obtains his anatomical information from more complete sources.

In the presentation of the actual physiological material, Professor Greene has maintained a simplicity and directness which is admirable. Criticism cannot treat so much the material presented, as it can the very obvious omissions. A text for medical school use which contains no mention of electrocardiography, no explanation of the typical electrocardiogram, material so easily and profitably introduced in discussing the spread of the contractile disturbance in the heart, can hardly be adequate. Other vital omissions occur in the very incomplete character of the discussion of the electrical changes involved in muscular contraction and the passage of the nerve impulse, and in the absence of mention of the venous pulse. It is needless to cite further similar defects which express the sacrifice one must make in presenting a histological type of physiology. It is very doubtful whether such texts can continue in medical school use, since they provide too unsubstantial a foundation for modern clinical medicine and surgery.

**Diseases of the Skin.** By RICHARD L. SUTTON, M.D., Professor of Diseases of the Skin, University of Kansas School of Medicine, etc. With 833 Illustrations and 8 Colored Plates. Second edition. Revised and enlarged. St. Louis: C. V. Mosby Company. 1917.

The excellence of Sutton's textbook on Dermatology was emphasized in these columns at the time of the appearance of the first edition. This second edition has offered the author an opportunity to "supply supplemental matter in a few instances, as well as to cover the important literature for the entire year 1916, and to eliminate a number of typographic and other minor errors." Gangrenous Balanitis, Atrophy of the Mucous Membranes of the Tongue and Mouth, and Atrophy of the Fatty Layer of the Skin, are the principal new topics discussed. 140 new illustrations have been added.

# THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, JANUARY 31, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

## MILITARY ANTI-TUBERCULOSIS PROGRAM PERFECTED.

PLANS for a complete program for the Prevention of Tuberculosis in the Army have been perfected by the National Association for the Study and Prevention of Tuberculosis, working in coöperation with the Surgeon-General, the Y.M.C.A., and other agencies. This, it is predicted, will put the impending second draft on a better health basis than the first. The program will include, not only a follow-up for every man discharged on account of tuberculosis, but a thorough-going health educational campaign among the soldiers.

Prior to the first draft, the National Association began to outline a preventive campaign. Owing to the magnitude of the task and the many practical delays in perfecting and applying the details of this scheme, the results were not as encouraging as might be expected. This was due to the fact that the report of names of men rejected by the draft on account of tuber-

culosis was inadequate, the slowness of the machinery in getting under way, and the many difficulties in determining the status of the men.

Inasmuch as these enlisted or drafted men do not become accepted soldiers until after their probationary period, lasting from three to six months in the various services, the Government assumes no responsibility for the after-care of those whose health breaks down during that period. Hence, this problem belongs to the civilian boards of health and the unofficial health organizations.

The National Association program falls into two main divisions: (a) follow-up work, and (b) educational work. The first obstacle to the follow-up program was Section Eleven of the Selective Service Regulations regarding the second draft, which forbids giving a record of a man's condition to any one except certain designated officials. The National Association officers, however, placed before the War Department the importance of this work, and were influential in persuading them to open the records of rejected men to state and local boards of health throughout the country, through the United States Public Health Service and the Council of National Defense.

Inasmuch as the above section of the regulations does not apply to men dismissed from training camps after they have passed draft boards, the Association arranged with the Surgeon-General and the division surgeons in camps to receive the names of all men thus dismissed. These lists are divided up by states and forwarded to state associations and state boards of health, for follow-up work. Where men are referred to localities where there are not at present facilities for this follow-up work, the Association will use its good offices to promote the establishing of such facilities.

In the meantime, the Medical Department of the Army has perfected its machinery for weeding out these tuberculosis cases. Every man passed by the draft board, after going into camp is examined by the regimental surgeon, re-examined by a tuberculosis board, and then, if suspected of tuberculosis, again examined by a tuberculosis expert. This follows a general policy mapped out and recommended by the National Association.

A large number of men have already been accepted into the service who were known to be tuberculous, many of them formerly inmates of

tuberculosis sanatoria. Part of the Association's work has been to get in touch with every tuberculosis sanatorium and dispensary in the country and compile lists of all recent male inmates of draft age, giving the history of their cases, and whether or not it was known if they were in the army at present. Hundreds of such names have already been received. These data are forwarded to the training camps, the men are located, and the results are reported back to the sources of information.

Furthermore, the Association has sent a letter to all of its fifteen hundred local cooperating agencies, giving the provisions of the second draft and urging that these agencies procure the names and addresses of all the men of military age in their section who are known to have tuberculosis; get in touch with these men, and arm them with the necessary affidavits to prevent, if possible, their being passed by the draft board, and recommend to the local draft boards the names of the approved tuberculosis experts in their section.

The Association is also cooperating with the Surgeon-General's office to aid the Government in providing sanatoria for those men who have been discharged from the service on account of tuberculosis after their probationary period has expired. All full-fledged soldiers and sailors returned from France or other stations will be cared for as near to their own homes as possible, in sanatoria accommodations provided by the Government. The Government intends to utilize, as far as possible, existing institutions.

From the United States Marine Corps, the National Association has secured each month a report of men rejected for tuberculosis from all its recruiting stations, and these men will receive the regular follow-up attention.

From the second, or educational, division of the program, it is hoped to derive the greater ultimate good by the establishment of fundamental preventive measures among the well.

The National Association is interested in any kind of educational campaign among the men in the various military camps that will tend to promote interest and information with regard to the control and prevention of communicable diseases, and toward the promotion of public and individual health in general. In the mobilization of such large numbers of men in various camps throughout the United States, there have developed an unusual number of somewhat serious epidemics of colds, coughs, pneumonia,

measles and various other respiratory and communicable diseases. That all these diseases can be controlled by education and by the exercise of adequate public health measures has been clearly demonstrated in the civilian population throughout the United States. Most of these epidemics are spread through ignorance and carelessness. It is inevitable where large numbers of men from all walks of life, and with all possible diseases and variations of physical habits, are thrown together in somewhat uncomfortable and crowded living conditions, that there will be an immediate increase in the amount of sickness from communicable diseases. It must be obvious, however, to even the most superficial observer, that if these men can be taught to maintain a reasonable standard of personal hygiene, and can be given a knowledge of the methods and principles of the control of communicable diseases, a rapid diminution in the sickness rate will follow.

In cooperation with the Educational Committee of the National War Work Council of the Y. M. C. A., the National Association will furnish a number of stock lectures dealing with tuberculosis, together with lantern slides to illustrate them. It will also arrange to put the educational secretaries of each of the camps in touch with public lecturers in and around their respective camps. The Association has requested the War Department to give careful consideration to the desirability of appointing one or more special officers detailed to lecture on tuberculosis and allied health subjects in all the army camps throughout the country.

The Association has prepared a special circular entitled, "Red Blood," giving in brief and attractive form a message to the soldier relative to personal fitness. A health "Don't Card" and a Public Health Manual may also be distributed, the latter being a text-book of personal hygiene.

The Association will also arrange to distribute, through the departmental executives of the Y. M. C. A., a number of special tuberculosis exhibits known popularly as "The Parcel Post Exhibit." In connection with these, moving picture films and lantern slides will be used.

The National Association Field Secretary, Dr. Pattison, is visiting the training camps and supervising this educational work.

PHILIP P. JACOBS,

*Assistant Secretary National Association  
for the Study and Prevention of Tuberculosis.*

## MASSACHUSETTS SOCIETY FOR MENTAL HYGIENE.

IN a recent issue of the JOURNAL we made editorial comment upon the latest meeting of the Massachusetts Society for Mental Hygiene, which was held in Boston, on the general subject of shell shock. The Massachusetts Society for Mental Hygiene has now become a well-established and recognized organization, and has already accomplished work of a considerable amount of value. As an indication of the character of this work may be mentioned its publications, eleven in number, which include articles on Psychopathic Hospitals and Prophylaxis, by Dr. Frankwood E. Williams; on The Menace of Syphilis to the Clean-Living Public, by Dr. J. Harper Blaisdell; on The Burden of Feeble-Mindedness, by Dr. Walter E. Fernald; on The Relation of Syphilis to Mental Disease, by Dr. Samuel T. Orton; and on The After-Care of Mental Patients, by Dr. Henry P. Frost. The Society also has a corps of about thirty speakers, men and women, who are authorities on the various phases of mental hygiene, who will, without charge, deliver public addresses on such subjects as the following: Preventable Psychoses and How to Prevent Them, by Dr. E. Stanley Abbott; Mental Disease and Crime, by Dr. V. V. Anderson; The Defective Child and the Schools, by Miss Frances E. Cheney; The Practical Phases of Inebriety, by Dr. Irwin H. Neff; and Mental Pitfalls of Adolescence, by Dr. Henry A. Stedman.

The Society, as an agency of preventive medicine, merits professional recognition for the work which it has already accomplished, and should be able to go on to accomplish still more of value as its methods become developed.

## WAR-RISK INSURANCE.

IN last week's issue of the JOURNAL appeared an editorial on War-Risk Insurance. In this editorial, statement was made that this insurance covered partial as well as total disability. Further information from the director of the Bureau of War-Risk Insurance now states that this is incorrect. War-risk insurance covers only total and permanent disability. No provision is made for payment of partial disability.

## MEDICAL NOTES.

**DECLINE OF GERMAN BIRTH RATE.**—A report from Germany states that the rapid decline in birth rate is causing serious anxiety throughout the country. While this decline was, of course anticipated as a direct outcome of war conditions, it is now felt necessary to take direct measures to offset this state of affairs.

"The falling-off of the birth rate is greater in large towns. It is very noticeable, for example, at Dresden, where, in 1903, the number of deaths was 8570; in 1913, 7329; in 1915, 6406. In the years mentioned, the number of births was 15,423, 11,297, 7371, respectively. As rate of mortality does not decline to the same extent, the marked decline in excess of births over deaths necessarily makes itself evident by the number of births in excess of deaths. This fell from 6853 in 1903, to 965 in 1915. There is no doubt the figures of 1916 and 1917 would show a much greater decline. In consequence of this, the greater efforts are being made in Dresden to foster infant life by classes of society who took no interest in such matters before the war.

It would be easy to prove by the examination of statistics of other German towns that what is happening in Dresden is happening elsewhere. Prussia and central Germany are the only places where the decline in the birth rate is less ominous and occurs in places where strong religious influences exist to combat it, as, for example, in the Roman Catholic districts of west Germany, where the population is largely of this faith. Naturally, the hard winter is having a disastrous effect on the population as regards elderly people enfeebled for want of adequate food."

## WAR NOTES.

**MORE NURSES FOR WAR.**—The American Red Cross has announced that it will require the enlistment of 30,000 more nurses if the prospective needs of the Government are to be met. In order to meet the increasing demands of the Army and Navy Nurse Corps, the Red Cross has modified somewhat its former requirements for enrolment. The age-limit has been lowered to twenty-one years, and in special cases nurses over forty may be accepted. Smaller schools for nurses have been placed on the accredited list, and applicants are judged on their merits.

**MEDICAL ADVISORY BOARDS.**—The following men have been appointed to serve on the Medical Advisory Board for the Winthrop and Boston division, under the Selective Service Law. They are: Dr. Charles L. Scudder, chairman. Dr. Frederick T. Lord, Dr. J. Homer Wright, Dr. Alex. Quackenboss, Dr. E. W. Taylor, Dr. Eugene A. Crockett, Dr. George W. Holmes, Dr. W. E. Boardman, and Dr. James I. McLaughlin. Those who will serve on the board

for the Boston and Brookline division are Dr. Henry L. Houghton, chairman, Dr. George B. Rice, Dr. Gardner H. Osgood, Dr. F. W. Guburn, Dr. John H. Payne, Dr. Alonzo G. Howard, Dr. J. Emmons Briggs, Dr. F. C. Richardson, and Dr. W. H. Eaton. Those who will serve on the board for the Milton and Boston divisions are Dr. Henry Jackson, chairman, Dr. F. H. Leahy, Dr. Joshua C. Hubbard, Dr. E. R. Williams, Dr. W. J. Daly, Dr. Harold Walker, and Dr. L. M. S. Miner. The local examination boards for districts in the vicinity of Boston will have their headquarters in the following places:

- District 22—Cable Memorial Hospital, Ipswich.
- District 25—Addison Gilbert Hospital, Gloucester.
- District 26—Beverly Hospital Corporation, Beverly.
- District 27—Reading State Sanatorium, Reading.
- District 28—Josiah B. Thomas Hospital, Peabody.
- District 29—Salem Hospital, Salem.
- District 30—Lynn Hospital, Lynn.
- District 31—Melrose Hospital, Melrose.
- District 32—Charles Choate Memorial Hospital, Woburn.
- District 33—Deaconess Hospital, Concord.
- District 34—Winchester Hospital, Winchester.
- District 35—Malden Hospital, Malden.
- District 36—Sims Arlington Hospital, Arlington.
- District 37—Waltham Hospital, Waltham.
- District 38—Somerville Hospital, Somerville.
- District 39—Cambridge Hospital, Cambridge.
- District 40—Newton Hospital, Newton.
- District 41—Boston City Hospital, Boston.
- District 41—Massachusetts General Hospital, Boston.
- District 42—Framingham Hospital, Framingham.
- District 43—Quincy City Hospital, Quincy.
- District 44—Norwood Hospital, Norwood.
- District 45—Canton Nursing Association, Canton.
- District 46—Brockton Hospital, Brockton.
- District 47—Sturdy Memorial Hospital, Attleboro.
- District 48—Jordan Hospital, Plymouth.
- District 49—Morton Hospital, Taunton.
- District 50—Union Hospital and City Hospital, Fall River.
- District 51—St. Luke's Hospital, New Bedford.
- District 52—Yarmouth Junction Hospital.
- District 53—United States Marine Hospital, Oak Bluffs.

**HEALTH AT ARMY CAMPS.**—Report of the week ended January 11 of health conditions at the National Guard and National Army camps states that among the 235 deaths, 149 were caused by pneumonia. Eighty-eight guardsmen died during the week, as compared with 109 the

week before, and 147 National Army men, as against 167 the previous week.

"Both the hospital admission and non-effective rates in the Guard and National Army camps increased during the week, with pneumonia generally prevalent. Among the Guardsmen there were 342 new cases of pneumonia, and in the National Army 340. The meningitis situation continued to improve, both in the Guards and National Army, while measles continued to decline in most of the camps. Epidemics of German measles and mumps prevailed in many camps, with scarlet fever increasing in the National Army and decreasing in the National Guard."

#### BOSTON AND MASSACHUSETTS.

**INFANTILE PARALYSIS CLINIC.**—The splendid work which has been carried on by the Harvard Infantile Paralysis Commission in treating children who have been victims of this dreaded disease merits a cordial and generous support, not only from those so afflicted, but from public-spirited people generally.

"Statistics given out yesterday show that 1118 children were examined at the Commission's clinics during the year ending Nov. 20, 1917. Of these, 402 had infantile paralysis prior to 1916, 670 during 1916, and 46 during 1917. The cases which are being followed up at the homes by the orthopedic nurses number 645; by the state field workers of the Commission, 520; and by the Boston Instructive District Nursing Association for the Commission, 125.

State clinics were held at Springfield, Newburyport, Haverhill, Lowell, Lawrence, Quincy, Malden, Melrose, Worcester, Greenfield, North Adams, Beverly and Lynn, with a total attendance of 956. There were 155 clinics at the Children's Hospital, Boston, with a total attendance of 3889."

The Commission, however, is sadly lacking in the necessary funds to carry on its work. Any curtailment of its work would be a public calamity, and, therefore, an appeal is being sent out over the State to raise a fund of \$18,000. Checks may be sent to the Commission, in care of Kidder, Peabody and Company, Boston.

**FRAMINGHAM HEALTH CONFERENCE.**—The quarterly meeting of the National Committee in charge of the Framingham health demonstration was held on January 17. Dr. Baldwin of Saranac Lake presided and Dr. Hatfield of Philadelphia was secretary. Other well-known men who attended the meeting were Dr. Frankel, of New York City; Dr. Kelley, of Massachusetts State Department of Health; Dr. Mahar, of Connecticut; and Dr. Smith, of the United States Public Health Service. Dr. Donald B. Armstrong reported the progress of the work in making a second medical examination of more than five hundred families.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending Jan. 19, 1918, the number of deaths reported was 306, against 294 last year, with a rate of 20.34, against 19.85 last year. There were 35 deaths under one year of age, against 33 last year.

The number of cases of principal reportable diseases were: diphtheria, 69; scarlet fever, 42; measles, 108; whooping cough, 76; typhoid fever, 1; tuberculosis, 28.

Included in the above were the following cases of non-residents: diphtheria, 5; scarlet fever, 7; tuberculosis, 1.

Total deaths from these diseases were: diphtheria, 4; measles, 4; whooping cough, 2; tuberculosis, 26.

Included in the above were the following non-residents: diphtheria, 2; tuberculosis, 1.

**EMERGENCY HOSPITAL OF STATE GUARD.**—Plans for the equipment of a hospital of 440 beds, under the jurisdiction of the State Guard, are well under way. The Executive Council has appropriated \$50,000, and Commonwealth Armory will be utilized for the storage of the equipment, and the great drill shed will be the location of the hospital should a need for it arise. The hospital will have a complete modern operating room with x-ray apparatus and sterilizing room. The personnel of the hospital force, under Colonel Brooks, numbers 72 officers and 173 men, already trained for the work.

**OPPOSITION TO HEALTH INSURANCE.**—The report of the special commission appointed to consider social insurance problems opposes the establishment of a State system of compulsory health insurance. A minority report, however, recommends the appointment of a special commission of five to devote two years' study to the matter. Another minority report recommends extension of medical care of school children.

Among other things, the report of the majority makes this statement:

"The real solution of the health question, it seems, is not indemnification for wage loss during illness, but prevention of illness. To cope intelligently with the sickness problem, therefore, our energies should be directed to making possible the extension and greater efficacy of our preventive work. Since the maintenance of a high standard of public health through the prevention of illness, is more desirable than the *post facto* treatment of disease, the majority believe it would be wiser under the present circumstances to follow a constructive policy of preventive medicine than to initiate any compulsory scheme of health insurance.

After serious consideration of the evidence submitted at the various hearings and of the several studies undertaken in its behalf, the majority has reached its conclusions, and does not feel justified in recommending a bill to establish a system of State health insurance within the Commonwealth.

In connection with its recommendations for the extension of existing voluntary agencies in the State, the report of the majority states that 'as a means of relieving the burden which illness often imposes on those of limited means, the majority of the commission submits recommendations and legislation which it believes will result in the extension and more effective administration of existing voluntary agencies in the Commonwealth. It is our opinion that an ultimate solution of the sickness indemnity question may be partly reached, at least, through the growth and development of voluntary industrial mutual benefit associations now in operation.'

In analyzing the evidence submitted to the commission and the summary of hearings presented at the beginning of its report, the report reads: 'The so-called compulsory contributory system of health insurance has few supporters. There appear to be two serious obstacles to the enactment of legislation of this character, namely, the united opposition of employer and employee to the plan, and the difficulties presented by the constitutional aspects of the question.'

The enactment of a compulsory health insurance law would be in the nature of class legislation, the majority believes. 'We cannot disregard the objection put forward by labor bodies and others,' the report says, 'that compulsory contributory health insurance is class legislation—inasmuch as it taxes one class of citizens,—the inherently healthy—for the benefit of the smaller, but less fortunate, group on which the burden of illness falls.'

The report of the minority members takes issue with that of the majority members at many points. 'Health insurance legislation,' it states, 'may be halted temporarily by the war, but the ultimate acceptance of it seems to us to be beyond question. . . . A shortage of labor, due in part to the drafting of a great body of our young men for the National Army and the cessation of immigration, makes it necessary for a great number of workers to labor long hours and under high tension. European countries are awaking to the fact that their workers must be provided for after the war. The American workmen are already asking what the Government is going to do for them after the war. Thus it would seem to us that the war could be an added argument for health legislation rather than for delay.'

Continuing, the report of the minority states: 'In the very limited time, however, in which the Commission has had to consider the question, the minority feel that sufficient evidence and proof have already been presented to show the vital need of sickness insurance as a means of relief to the overburdened wage-earners in the Commonwealth. While the minority refrain at this time from submitting a bill establishing health insurance because we have realized some of the difficulties involved in enacting a measure

of such great importance, however, we are thoroughly convinced that a system of non-contributory health insurance is the only solution of the problem of sickness and its contingencies. The principle of non-contributory health insurance appeals to us by far the eminently fair and correct means of solving the problem.'

In recommending further study of the question, the minority says it is submitting a bill to the Legislature providing for the appointment by the governor of a commission of five persons, one of whom shall be a representative of labor, for a period of two years, in which to investigate the question. An appropriation of \$25,000 is asked for the commission.'

### Miscellany.

#### RESOLUTIONS ON THE DEATH OF MR. RUETER.\*

CONRAD JOHN RUETER, son of Henry Herman and Mary Emily (Domansky) Rueter, was born in Roxbury, Massachusetts, September 26, 1863, and died in Boston, December 18, 1917.

Mr. Rueter graduated from the Roxbury Latin School in 1880, and from Harvard College in the Class of 1884. He studied one year in the Harvard Law School, and another at the Boston University Law School; he was admitted to the Suffolk Bar in July, 1886. In August of the same year he went to Germany to familiarize himself with other systems of jurisprudence, and studied particularly Roman law, at Bonn. He returned to Boston late in 1887 and began the active practice of his profession at 23 Court Street.

While at Cambridge he was a faithful student, receiving his bachelor degree *cum laude*, and an honorable mention in English composition. While an undergraduate he joined the Everett Athenaeum and the Pi Eta Society, and was also a member of the Varsity lacrosse team at a time when Harvard was a leader in this branch of sport.

In 1896 Mayor Quincy appointed him trustee of the Boston City Hospital, a position which he continued to occupy during his life. From May, 1896, to May, 1912, he was secretary of the board.

In 1892 he married Miss Louise Ramseyer, who died without children; he married his former wife's sister Helen in April, 1904; two sons survive him.

During his college course Mr. Rueter was quiet, industrious and earnest; work and play he undertook in the same simple and direct manner; he was, for instance, a thoroughly reliable and effective lacrosse player; and his record in study, alluded to above, shows many of the same characteristics.

\* Adopted at the meeting of the Senior Staff, Boston City Hospital, January 11, 1918.

Throughout his later life the qualities of his youth and early manhood were equally conspicuous. He was an efficient and conscientious trustee of this hospital; constant in attendance at the many board meetings; careful and thorough in his duties as its secretary; advocating and working steadily for those things which he believed to be of real value to the hospital, and utilized his legal training as an added factor in the worth of his work.

The senior staff expresses its sincere sorrow for his loss; it is a melancholy fact that, in spite of the skill of its surgeons and the care of its nurses, he died under the roof of the hospital he had served so long.

The staff also desires to place on record its thorough appreciation of the work he has done for the welfare of this institution,—work not yet completed when it was so abruptly ended by his too early death.

#### INSTRUCTIVE DISTRICT NURSING ASSOCIATION.

THE Instructive District Nursing Association makes public a report of its work during the summer.

Its main contribution to the war has been to allow Miss Beard to spend a large amount of her time on various war committees. She is now serving on the Committee on Child Conservation of the State Department of Health; she is chairman of the Child Welfare Section of the Woman's Council of Defense of Massachusetts, and is on the section of that council which deals with nursing problems, and she is serving on three committees of the Council of National Defense: General Blue's Sub-Committee on Public Health Nursing, of which she is chairman, the Committee on Nursing of the General Medical Board, and the Committee on Home Nursing of Mr. Gompers' Committee on Labor. Her work on these committees and as President of the National Organization for Public Health Nursing, has made it necessary for her to spend a good deal of time in Washington and New York.

Two of its best nurses have positions as Child Welfare Supervisors, under the Committee on Child Conservation of the State Department of Health, and one of its best supervisors has left to work with the Red Cross. Miss Peabody, one of its vice-presidents, is vice-chairman of the State Committee on Child Conservation.

The increase in its work for the first six months of the year was unprecedented. This naturally has made it imperative to increase the number of the staff, and with the students, there are 101 nurses now working for the association. Miss Strong, the head of the educational department, who is in charge of the course in Public Health Nursing at Simmons College, has 10 students taking the eight months' course, and



25 taking the four months' course with the association, a larger number than ever before. Interest in public health nursing, instead of lagging behind, has been immensely increased, owing to the change of attitude of the Red Cross in regard to keeping public health nurses at public health work,—a policy which the Red Cross has now recognized as of great importance.

The association is continuing to take charge of all the patients in Boston given to it by the Harvard Commission on Infantile Paralysis. Unfortunately, because of the Harvard Commission's lack of funds, it is incumbent upon the association to raise the money for the extra expense of the work done by its nurses with paralyzed children.

The Health Center experiment in Hyde Park is developing well, and a contribution of \$2400, from the Permanent Charity Fund of the Safety Deposit and Trust Company will permit further development by means of the addition of a dental clinic. By means of another \$2400 given by the Permanent Charity Fund, it has been possible to establish a nurse at time of confinement in the Charlestown District, where the death rate of babies is astoundingly high.

A visiting housekeeper has been engaged, who will teach our patients how to plan and buy, and how to make the best use of food.

A press agent has secured for the association, greatly increased publicity in the Boston papers, and has prepared and sent out the first of a series of bulletins, which are to bring the work more graphically before the public.

## RECONSTRUCTION AND RE-EDUCATION OF UNITED STATES SOLDIERS.

Joseph Colt Bloodgood, Chairman of Committee on Preparedness, Southern Medical Association, addresses the following letter:

To physicians and surgeons in industrial practice:

"I have received a large number of answers to the letters sent out dated September 10, 1917. These letters and personal conversation with physicians and surgeons in industrial practice seem to demonstrate that the number of cripples who need reconstruction and re-education is relatively so small, that even in large industries, it has not been considered of sufficient importance to develop the problem as will have to be done with the soldiers crippled in this war.

The Surgeon-General and the Department under Major Edgar King is preparing for the proper reconstruction and re-education of the crippled soldiers, but when this is accomplished, employment of some kind must be found for the soldier on his discharge, or the whole scheme fails.

The Government, naturally, must not only depend upon help in the re-education and reconstruction upon specially trained and qualified

Medical Reserve Corps Officers, but upon the employers of labor in the great industries of this country, to find a job for which the crippled soldier has been re-educated and reconstructed.

It is my personal opinion that the problem is too large a one for any single industry to solve alone. The industries should combine as the railroads have combined in the settling of this very important war problem.

Although at the present time it is perhaps, one of the most difficult problems of the war, it is at the same time a peace problem.

In all the industries there must be many cripples in time of peace, who need reconstruction and re-education. For this reason, if the employers of labor coordinate with the Government now for the solution of this problem, they will establish and develop a scheme which can be utilized for the crippled men in industry in time of peace.

There is no doubt that 'safety first' has reduced the number of accidents. The improvement of first aid and its instruction, and the medical departments of the industries have greatly improved the results, but the question of re-education, especially for a better job, has not received the same consideration.

Please discuss this among yourselves and with the officers of your Company, and offer your combined advice and aid to the Surgeon-General of the United States Army and Navy."

## COLD-PACK CANNING AND BOTULISM.

THE United States Department of Agriculture authorizes the following statement:

Botulism, often called sausage poisoning, is a specific intoxication brought about by *Bacillus botulinus*, an organism isolated by Van Ermengen from insufficiently cooked sausages which had caused a severe outbreak of food poisoning in Belgium in 1895. The symptoms (nausea, gastric pains, visual disturbances, muscular weakness, etc.) are caused by a definite toxin or poison produced by the *Bacillus botulinus* outside of the body.

The *Bacillus botulinus* is an anaerobic organism—that is, it grows in the absence of air. It grows readily at 20 to 25 degrees centigrade, but only sparingly at 37 degrees centigrade,—the temperature of the body, and there is no conclusive evidence that it produces its toxin to any extent in the digestive tract of animals. *Bacillus botulinus* does grow readily and produces its toxin in protein foods, such as meat or fish products. Some investigators state that it also produces its toxin readily in protein-containing vegetables, like peas, beans, and corn. When growing in these foods, the organism produces a very powerful poison which produces the symptoms mentioned above, or even death, when

eaten in extremely small amounts. Fortunately, cases of botulism are not common in this country.

The *Bacillus botulinus* is a spore-forming organism, but both the organism and its spores are not very resistant to heat, the spores being killed by heating to 80 degrees centigrade for one hour. The toxin which the organism produces is also destroyed by boiling. Thorough cooking at the boiling temperature is, therefore, all that is necessary to kill the organism and destroy its toxin in the food, and cases of botulism are due to the eating of food which has been infected with the organism and not been sufficiently cooked. Sausages, which might become infected with this organism, present ideal conditions for its growth, and have been a frequent cause of botulism. From this fact the name of the disease is derived. Infected meat products and, in a few instances, canned vegetables and fruits have been given as causes of botulism.

Recently Dr. Dickson of San Francisco has reported\* a study of eleven outbreaks of food poisoning, occurring during the past eighteen years in California, which he attributes to eating canned vegetables and fruits. In these cases no definite information is available as to the methods used in canning the vegetables, but it is reasonable to assume that the contamination of the goods might have been brought about by the selection of food of poor quality for canning, by lack of cleanliness in packing the products, by the neglect of some essential steps in the process, or by failure of the heat to penetrate to all parts of the can in sterilization.

There is no danger that the type of food poisoning known as "Botulism" will result from eating fruits or vegetables which have been canned by any one of the methods recommended by the United States Department of Agriculture, providing that such directions have been followed carefully, and that no canned goods are eaten which show signs of spoilage. In case of any doubt as to whether the contents of a particular can have spoiled, it should be thrown away. If fed to chickens or other animals, it should be boiled. No canned food of any kind which shows any signs of spoilage should ever be eaten. In the cold-pack method of canning given out by the Department of Agriculture, only fresh vegetables are recommended for canning, and sterilization is accomplished by the following processes: Cleansing, blanching, cold-dipping, packing in clean, hot jars, adding boiling water, sealing immediately, and then sterilizing the sealed jars at a minimum temperature of 212 degrees Fahrenheit for one to four hours, according to the character of the material. Since the spores of *Bacillus botulinus* are killed by heating for one hour at 175

degrees Fahrenheit† there is no reason to believe that the *botulinus* organism will survive such treatment.

The *Bacillus botulinus* has been found in the digestive tracts of some animals, especially the pig and the fowl, probably occurring there in the same manner as does the organism of tetanus (lockjaw) in the intestinal tract of the horse. It is not a parasite in the ordinary sense, but rather a saprophyte. From these sources it may be deposited on the soil, although attempts at isolating it from the soil have generally given negative results.

† Rosenau, M. J.: Preventive Medicine and Hygiene, New York and London, 1917, 2 ed., p. 627; Jordan, E. O.: A Text-book of General Bacteriology, Philadelphia and London, 1916, 5 ed., p. 356; Park, W. H., and Williams, Anna W.: Pathogenic Microorganisms, New York and Philadelphia, 1917, 6 ed., p. 449.

## THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

BY MERRILL E. CHAMPION, M.D., WOLLASTON, MASS.

(Continued from page 168.)

In a previous issue of the JOURNAL (January 17) so much of the venereal disease program of the State Department of Health as has to do with reporting methods was dealt with. The following article deals with:

Subject II—*Measures for Diagnosis and Treatment*. These may be subdivided as follows:

### A. Measures for Diagnosis.

I. Clinical—At public clinics and through private physicians.

II. Laboratory—Microscopic examination of discharges for gonococci or spirochetes; and Wassermann tests of blood or spinal fluid, through the State and municipal laboratories.

### B. Measures for Treatment.

I. Through public clinics.

II. Through private physicians.

### A. MEASURES FOR DIAGNOSIS.

Laboratory diagnostic facilities are now pretty generally available throughout Massachusetts. Smears are examined for gonococci at the State Diagnostic Laboratory at the State House, while Wassermann tests are performed free for physicians by the State Wassermann Laboratory at the Harvard Medical School. In addition to this, a number of cities maintain similar facilities for their own citizens. Certain of the larger clinics make examinations also for the treponema pallidum, and do complement-fixation tests for gonorrhea. It is aimed, by means of further clinic facilities, to be mentioned later, to render possible for the smaller cities what has hitherto been confined to the largest.

### B. FACILITIES FOR TREATMENT.

Unfortunately, existing facilities for the accurate treatment of gonorrhea and syphilis are in-

\* Jour. Am. Med. Assoc., Vol. lxi, pp. 966-968, No. 12, 1917.

adequate. Persons suffering from venereal disease go either to the private physician or to the quack, with the exception of those coming to Boston hospital clinics. The number of those going to quacks must largely outnumber those going to reputable physicians. Owing to the difficulty of obtaining salvarsan or its substitutes, and to the difficulties attendant on the administration of this drug, many persons needing specific treatment, in order to prevent them from being a menace to the public, have to go without.

According to an old law incorporated in the Revised Laws, Chapter 75, Section 41 (as amended by 1906, 365, Sec. 1), "Each city shall provide for the treatment, either in a hospital or as out-patients, of indigent persons who are suffering from contagious or infectious venereal diseases." Section 42 of the same chapter states that "No discrimination shall be made against the treatment of venereal diseases in the out-patient department of any general hospital supported by taxation, in any city in which special hospitals, other than hospitals connected with penal institutions, are not provided for the treatment of such diseases at public expense; but any such hospital may establish a separate ward for their treatment." In spite of this mandate, few cities have such facilities. The State Department of Health program contemplates facilities of this sort at various points throughout the State. The relationship of this Department to these clinics will center about the distribution of the arsphenamine, which the State is to manufacture and distribute.

A "State-approved clinic," under this scheme, will be one situated in the center of a district, so as to be easy of access. In the majority of instances, the most satisfactory housing for such a clinic will be a suitable hospital out-patient department. Close coöperation between clinic and local board of health will be indispensable. Arsphenamine will be furnished these clinics, both for their own use and for distribution to qualified practitioners of the district who may wish to use the drug in their own offices for their own patients. Preference will be given, however, to the needs of the clinic, and to those patients who are in an infective stage of their disease.

In charge of the "State-approved clinic" it is proposed to have a "Chief," who, in addition to supervising the work of the clinic, will act as the agent of the State Department of Health for the distribution of arsphenamine. The Legislature is being asked for an appropriation to be used to help in the financing of these clinics. It will probably be found advisable to make most of them more or less self-supporting by charging small fees for services to those who are able to pay.

The general public needs educating to the point where they will demand both careful diagnosis on the part of their physicians and ade-

quate treatment. Such an attitude on the part of the public will be greatly to the advantage of the competent and reputable physician, who is willing properly to equip himself for the treatment of venereal disease. It is the province of the clinic to try to bring this about. Educational measures must, after all, receive most of the emphasis for years to come, if the venereal evil is to be controlled.

A most important feature of any clinic is its follow-up work. The greatest discretion is called for on the part of nurse or social worker, but is of corresponding value in preventing serious results to the patient himself or to his family, through neglect in carrying out his physician's instructions.

To summarize: The Department of Health plans to establish some fifteen "approved clinics" throughout the State, where adequate treatment for venereal disease may be had by those not able to pay anything, or able to pay only a small sum, for first-class care. Such clinics will have for their primary object the stamping out of venereal disease in its infective stages; more particularly syphilis, through the use of arsphenamine. These clinics will serve as foci for the distribution of arsphenamine to practising physicians, and, it is expected, as centers where physicians may send their patients for expert treatment, and where they themselves may come for instruction if they so desire. In a word, the object will be thorough diagnosis, better treatment, modern follow-up work, and closer coöperation with the practising physician.

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## Correspondence.

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### REPORTING OF ACCIDENTS FROM LOCAL ANESTHETICS.

*Mr. Editor:—*

The Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association has undertaken a study of the accidents following the clinical use of local anesthetics, especially those following ordinary therapeutic doses. It is hoped that this study may lead to a better understanding of the cause of such accidents, and consequently to methods of avoiding them, or, at least, of treating them successfully when they occur.

It is becoming apparent that several of the local anesthetics, if not all of those in general use, are prone to cause death or symptoms of severe poisoning in a small percentage of those cases in which the dose used has been hitherto considered quite safe.

The infrequent occurrence of these accidents and their production by relatively small doses point to a peculiar hypersensitiveness on the part of those in whom the accidents occur. The data necessary for a study of these accidents are at present wholly insufficient, especially since the symptoms described in most of the cases are quite different from those commonly observed in animals even after the administration of toxic, but not fatal doses.

Such accidents are seldom reported in detail in the medical literature, partly because physicians and dentists fear that they may be held to blame should

they report them, partly, perhaps, because they have failed to appreciate the importance of the matter from the standpoint of the protection of the public.

It is evident that a broader view should prevail, and that physicians should be informed regarding the conditions under which such accidents occur, in order that they may be avoided. It is also evident that the best protection against such unjust accusations, and the best means of preventing such accidents consist in the publication of careful detailed records when they have occurred, with the attending circumstances. These should be reported in the medical and dental journals when possible; but when, for any reason, this seems undesirable, a confidential report may be filed with Dr. R. A. Hatcher, 414 East Twenty-Sixth Street, New York City, who has been appointed by the Committee to collect this information.

If desired, such reports will be considered strictly confidential so far as the name of the patient and that of the medical attendant are concerned and such information will be used solely as a means of studying the problem of toxicity of this class of agents, unless permission is given to use the name.

All available facts, both public and private, should be included in these reports, but the following data are especially to be desired in those cases in which more detailed reports cannot be made:

The age, sex, and general history of the patient should be given in as great detail as possible. The state of the nervous system appears to be of especial importance. The dosage employed should be stated as accurately as possible; also the concentration of the solution employed, the site of the injection (whether intramuscular, perineural or strictly subcutaneous), and whether applied to the mouth, nose or other part of the body. The possibility of an injection having been made into a small vein during intramuscular injection or into the gums should be considered. In such cases the action begins almost at once, that is, within a few seconds.

The previous condition of the heart and respiration should be reported if possible; and, of course, the effects of the drug on the heart and respiration, as well as the duration of the symptoms, should be recorded. If antidotes are employed, their nature and dosage should be stated, together with the character and time of appearance of the effects induced by the antidotes. It is important to state whether antidotes were administered orally, or by subcutaneous, intramuscular or intravenous injection, and the concentration in which such antidotes were used.

While such detailed information, together with any other available data, is desirable, it is not to be understood that the inability to supply such details should prevent the publication of reports of poisoning, however meagre the data, so long as accuracy is observed.

The committee urges on all anesthetists, surgeons, physicians and dentists the making of such reports as a public duty; it asks that they read this appeal with especial attention to the character of observations desired.

TORALD SOLLMANN, *Chairman*,  
R. A. HATCHER *Special Referee*,  
*Therapeutic Research Committee of the*  
*Council on Pharmacy and Chemistry of*  
*the American Medical Association.*

#### SOCIETY NOTICES.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY.—Stated meeting at United States Hotel, Boston, Thursday, February 7, 1918, at 11.30 a.m.

Dr. F. Russell Dame, of Braintree, will read a paper on "Septic Cases in Private Practice."

F. H. MERRIAM, M.D., *Secretary*,  
South Braintree, Mass.

NEW ENGLAND PEDIATRIC SOCIETY.—A meeting of the New England Pediatric Society will be held at the Boston Medical Library on Feb. 1, 1918, at 8.15 P.M. The following papers will be read:

1. President's Address, Charles Hunter Dunn, M.D., Boston.

2. Clinical Spasmophilia, William W. Howell, M.D., Boston.

3. Experimental Studies on Growth after Feeding Certain Ductless Glands, Warren R. Slisson, M.D., Boston.

CHARLES HUNTER DUNN, M.D., *President*.  
RICHARD M. SMITH, M.D., *Secretary*.

#### RECENT DEATHS.

EDWIN LAWSON FARR, M.D., died at his home in Brookline, January 24, 1918, at the age of 72. He was a graduate of the University of the City of New York, in 1878, and practised in Roxbury until 1915, when he moved to Brookline.

DR. TANEMICHI AOYAMA of Tokio, Japan, an imperial court physician, died recently of nephritis. He was dean and professor of the medical college of the Tokio Imperial University, having held those offices since 1888. He was born in 1859, the third son of the late Kagemichi Aoyama, a Samurai of the Naeki clan.

ALBERT H. VARNEY, M.D., of Newfields, N. H., died recently at his home in that town. He was born at North Berwick, Me., on March 27, 1836, and graduated from Harvard Medical School in 1857. In 1860 he began practice in Newfields, N. H., and continued in his profession in that town and in Exeter, N. H., up to the time of his death. Dr. Varney was an assistant surgeon in the Second New Hampshire Regiment. He was elected to the Legislature from Newfields in 1871, serving one term. For 23 years he was town clerk and several times was selectman. His widow and three daughters survive him.

JOHN ALEXANDER GORDON, M.D., died at his home in Quincy, January 25, 1918, aged 74 years.

Dr. Gordon was born in New Perth, P. E. I., May 30, 1843, was educated in the public schools there and at the Prince of Wales College. He came to Boston in 1866 and entered Harvard Medical School, graduating in 1871. In 1870-1871 he was resident house physician at the Boston City Hospital. He came to Quincy in July, 1871, to practise, and had been a resident of that city ever since.

From 1872 to 1877, Dr. Gordon was town physician, and from 1884 to 1889 was chairman of the Board of Health. He was instrumental in having the Quincy City Hospital established in 1890, and had always been very much interested in its advancement and welfare.

Since 1891 he had been a trustee and chairman of the executive board, consulting physician, and on the medical and surgical staff of the hospital. Dr. Gordon was also interested for many years in developing a water works system for the city, and promoted the Quincy Water Works Company, now owned by the city. He was president of the company for many years, and for a time was also president of the Sharon and Marblehead Water Companies. He was elected to the School Committee in 1884 and served ten years.

Dr. Gordon was a member of Rural Lodge, A.F. and A.M.; St. Stephen's Chapter, R.A.M.; the Y.M.C.A., of which he was a director; the Granite City Club, the Quincy Yacht Club, the Megantic Fish and Game Association, the Boston City Hospital Club, the American Medical Association, and the Massachusetts Medical Society.

Dr. Gordon was unmarried. He is survived by two nephews and a niece.

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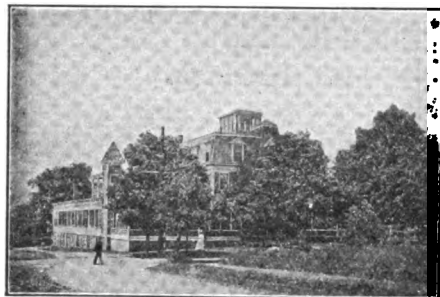
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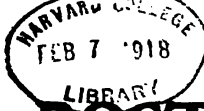
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VOL. CLXXVIII  
No. 6

THURSDAY, FEBRUARY 7, 1918

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## CONTENTS

### ADDRESS

LABORATORY METHODS IN TUBERCULOSIS. *By G. Benjamin White, Ph.D., Otisville, N. Y.*

### ORIGINAL ARTICLES

THE PROBLEM OF PHYSICAL SELECTION APPLIED TO LARGE NUMBERS OF APPLICANTS.

*By Andrew F. Downing, M.D., Cambridge, Mass.*

RE-EDUCATING GERMAN WAR CRIPPLES AT DÜSSELDORF.

*By Douglas C. McMurtrie, New York.*

PHYSICAL SELECTION IN ITS RELATION TO HEART AND LUNG CONDITIONS.

*By M. J. Cronin, M.D., Boston.*

A STUDY OF THE KIDNEY FUNCTION IN SENILITY.

*By W. C. Rappleye, A.B., Foxboro, Mass.*

### CLINICAL DEPARTMENT

A PSYCHOPATHIC CONSTITUTION RESEMBLING SO-CALLED MORAL INSANITY, AND ITS INTERPRETATION. *By J. Victor Haberman, M.D., New York.*

### EDITORIALS

MOBILIZING THE PROFESSION FOR WAR.

THE NEEDS OF THE MEDICAL SERVICE.

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For complete table of contents, see first text page.

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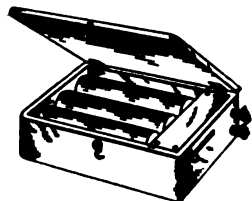
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### MEDICINE.

#### EXPERIENCE IN COLONY TREATMENT AND AFTER-CARE.

WOODHEAD AND VARRIER-JONES (*The Lancet*, November 24, 1917) discuss their experiences in the colony treatment of consumption and after-care.

They believe that in England, at least, sanatorium treatment of consumption for the well-to-do has been a success, but that for the laboring classes it has been a failure. The chief reason for this is that the workingman's stay in the sanatorium has been far too short and that his life has not been sufficiently supervised after leaving the sanatorium. They discuss the cause of this state of affairs and the various means of remedying it.

There are two ways in which this can be done—one is to prolong the actual treatment at the sanatorium, and the other is to provide suitable accommodation and to give the workingman an equal opportunity of carrying on the treatment in his own home,—an opportunity already enjoyed by his more fortunate rich neighbor; furthermore, if the consumptive patient is to be asked to perform labor, it is essential that such labor should be of a useful type and of a kind that under other conditions can be definitely remunerated. There is a strong feeling in English institutions on the part of patients against performing any labor, whatsoever, on the ground that they do not come there to work and that no one has a right to make them do so. (Compare this with the rule laid down by the Trustees of Massachusetts Hospitals for Consumptives, that, "work shall be regarded as a therapeutic agent and shall be prescribed as such."—J. B. H.).

They then present the views of the workingman in regard to these very questions.

They take up the work of after-care associations formed for the purpose of supervising the discharged sanatorium patient, and provide the means of providing work under conditions which will benefit him and enable him to maintain his health. They present the details of such a scheme and a typical case.

They believe in providing some method in which tuberculosis labor may be subsidized for a short or long period after leaving the sanatorium. They would maintain that under ideal conditions the patient should remain in the sanatorium or under its close supervision until he no longer needs to be so subsidized.

They sum up the advantage of such conditions as follows:

1. Prolongation of the period of treatment with (a) more intensive, because more interesting and better graduated, treatment; (b) the utilization of suitable occupations in such treatment even during the earlier stages of residence in the colony; (c) the continuation of training and the consolidation of the improvement already gained during the preliminary stages of treatment; (d) more personal supervision and immediate encouragement.

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(Continued on page vi.)

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(Continued from page 10.)

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8. The education of patients in the "ritual" necessary for their own "nutrition," maintenance in, or restoration to, health and strength, and especially the knowledge of how to render themselves harmless to themselves, their families, and their friends.

9. The inculcation of a feeling of moral and physical self-respect involved in

10. The knowledge that they are being cared for, not out of charity, but because their fellows—the State or community—recognize that they, members of this community, have fallen by the way, not a result of their own misdoings, but because surroundings were unfavorable and conditions adverse, and that these righted they still have a chance of making a success of their life and work.

In the following article MEEK (*The Lancet*, Nov. 24, 1917) discusses the same subject under the title of "The Value and Limitations of Sanatorium Treatment as Regards the Working Classes."

The chief objections to the present system are the return of the workman to faulty environment, the lack of provision for prolonged treatment, the lack of provision for re-treatment, the admission of cases unsuitable on grounds other than medical and the need of earlier diagnosis. [J. B. H.]

#### SURGICAL COMPLICATIONS OF TYPHOID AND PARATYPHOID FEVERS.

WEBB-JOHNSON (*The Lancet*, Dec. 1, 1917) discusses the surgical complications of typhoid fever and the treatment of the same.

Among others he considers intestinal hemorrhage, intestinal perforation, rupture of the spleen, abscess of the liver, gall-bladder affections, affections of the genito-urinary system, parotitis, joint complications, bone complications, with particular reference to typhoid spine. Finally, he discusses in brief the problem of typhoid carriers and the question of anti-inoculation. [J. B. H.]

#### THE INTERNAL FORM OF ACUTE HODGKIN'S DISEASE.

HOWELL (*The Practitioner*, December, 1917) discusses the acute form of Hodgkin's disease characterized by the enlargement of glands within the abdomen or thoracic cavity with very little enlargement of the superficial glands. This is known as the internal form. He presents one case in detail with a post mortem report. He discusses the differential diagnosis of this condition from appendicitis, cerebrospinal meningitis, tuberculous meningitis, pulmonary tuberculosis, and typhoid fever. He takes up briefly the historical aspects of this condition. [J. B. H.]

(Continued on page viii.)



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The fact must be appreciated that while antisepsis marked a long step forward in surgical progress, the tendency and practice of present-day methods and technique is to assure asepsis—a distinction with a difference.

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(Continued from page vi.)

### VINCENT'S DISEASE OF THE MOUTH AND PHARYNX.

McKINSTRY (*The Practitioner*, December, 1917) in an elaborate article discusses the general subject of Vincent's disease, otherwise known as Vincent's angina. He compares the seasonal variation of cases of true Vincent's angina with cases of ulceration of the gums due to other spirochaetal infections. The ages of his cases vary from 16 to 60. Nearly all occur in young, robust, healthy-looking men. This does not agree with other observations on the subject. In most of these men there was a most considerable amount of oral sepsis. Such affections do not appear to be highly contagious, but are generally transmitted by direct contact such as the mouthpieces of pipes, cigarette-holders, etc. He discusses the organisms that have been held responsible for this condition by various observations and describes their cultivation. The only condition which this disease is likely to be mistaken for is pyorrhoea alveolaris.

Treatment, when the disease is limited to the gums, consists in having the teeth and gums thoroughly attended to. He then discusses 157 cases of spirochaetal affections of the tonsils, so-called Vincent's angina. He describes the symptoms of this condition, particularly the differential diagnosis from diphtheria. He gives many illustrative cases and a long list of references. [J. B. H.]

### MILITARY MEDICINE.

#### THE ETIOLOGY AND TREATMENT OF WAR NEUROSES.

HURST (*British Medical Journal*, Sept. 20, 1917), discussing the etiology and treatment of war neuroses, takes up (1) exhaustion resulting in neurasthenia and soldier's heart. He then takes up these abnormal conditions resulting in stupor and amnesia, hysteria, hyperadrenalism and hyperthyroidism, and exaggerated defensive reflexes as the result of violent stimulation of the emotions. Finally he takes up the various forms of shell shock. [J. B. H.]

#### BLOOD PRESSURE AND SURFACE TEMPERATURE IN 110 CASES OF SHELL SHOCK.

GREEN (*The Lancet*, Sept. 22, 1917) presents her observations on blood pressure and its relation to the physical condition of patients in the British Army.

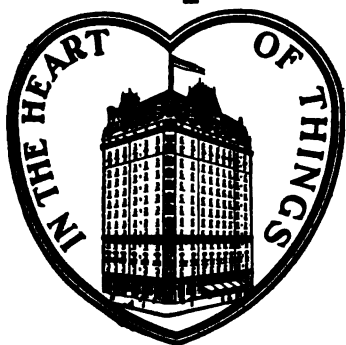
It was found that 55 men showed on admission a pressure below 120 mm. Hg., and of these 25 were between 88 and 110. These were the severe cases of shell shock. Of the other 55, 28 were between 130 and 150 mm. Hg., and 27 between 120 and 130. Of those above 130 only 4 were severe cases. With the exception of 8 men, all showed subnormal surface temperature varying from 18° to 31.5°C. The temperature was taken in the hand with a surface temperature thermometer, the temperature of the air and a healthy control being noted at the same time.

All of the cases with a very low blood pressure were suffering from dreams which woke them in a state of terror, sweating, and trembling. Their hands were dusky and clammy, and most of them had a tremor. They showed a marked fatigability and irritability; most of them were depressed and showed a great lack of self-confidence and initiative; all suffered from headache. On admission nearly all had dilated pupils.

An improvement in the general condition was coupled with a gradual rise of pressure. At the same time the dreams became less terrifying and there were fewer signs of fear. In some cases which had shown a return of symptoms—such as nightmares, tremors, headaches, or had some cause for considerable worry

(Continued on page x.)

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(Continued from page viii.)

—it was found that there was a drop in blood pressure at the same time. In most cases there was a rise of surface temperature as the general condition improved, though any subsequent fall in surface temperature or blood pressure did not always coincide.

No case showed any organic lesion, and the urine was normal.

As a gradual rise in blood pressure was found to coincide with general improvement in condition, pituitary and thyroid extracts were given in order to see whether a general improvement could be obtained more quickly.

An interesting point was the almost constant relationship between the low blood pressure and terrifying dreams. It seems as though the vaso-motor disturbance which was produced at the time of the shock was rendered more or less permanent by the constant repetition in dreams of his former terrifying experiences. At the same time the low blood pressure caused a cerebral anaemia and lessened mental and physical activity, which prevented the man from throwing off the effects of his imagination—thus a vicious circle being produced. A gradual or rapid rise of blood pressure in nearly every case was accompanied by a change in the character of the dreams, the terror element being less marked. [J. B. H.]

### SURGERY.

**FIVE HUNDRED CONSECUTIVE CASES OF ACUTE GONORRHOEA TREATED WITH VACCINES.**

LUMB (*British Medical Journal*, Oct. 6, 1917) discusses the treatment of 500 consecutive cases of acute gonorrhoea with vaccines. The general effects of this treatment on the patients are as follows:

1. Mental relief at the rapid disappearance of the discharge.

2. Rapid disappearance of pain on micturition.

3. Rapid disappearance of pain on irrigation.

4. Exercise can be taken without delaying the cure.

Of his 500 cases 222, or 44%, had some form of complication. The average duration of the 278 uncomplicated cases was 35 days, or 5 weeks. The average stay of all complicated cases was 52 days.

It has from time to time been suggested, though never with adequate proof, that vaccines are dangerous in the acute stage, and lead to complications. If this were so it would have been expected that in this series of 500 acute cases, all treated from the start with big doses, a large proportion of complications would have developed, especially epididymitis and arthritis. This is not the case.

Of the 101 epididymitis cases 70 were present on admission, leaving 31 developed out of 430 cases, that is, 7%.

Of the 10 arthritis cases 8 were present on admission leaving 2 developed out of 490 cases, that is, less than 1%.

The most remarkable feature of all is the exceptionally low percentage of relapses. Out of the 500 cases two only have occurred during a period of 4 months after completion of the series. Many of the cases left the hospital more than six months ago. This gives a relapse rate of less than 1%. It is a very satisfactory proof of the value of vaccines as a test of cure, and although by admitting that the number of days under treatment could be reduced in many instances, the relapse rate would very soon counterbalance any gain. At the present time everything possible has to be done to minimize the number of relapses of gonorrhoea cases, and this system has been found, in actual practice, to be far in advance of any other; whilst the number of days under treatment compares favorably with any known figures.

[J. B. H.]

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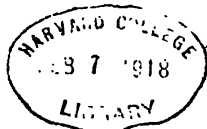
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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

February 7, 1918

ADDRESS		The New System of Gynecology. Edited by Thomas Watts		
LABORATORY METHODS IN TUBERCULOSIS. By G. Benjamin White, Ph.D., Otisville, N. Y. ....		Eden, M.D., and Outhbert Lockyer, M.D. ....	198	
		Clinical Surgical Diagnosis for Students and Practitioners. By Prof. F. de Quervain .....	198	
ORIGINAL ARTICLES				
THE PROBLEM OF PHYSICAL SELECTION APPLIED TO LARGE NUMBERS OF APPLICANTS. By Andrew F. Downing, M.D., Cambridge, Mass. ....		EDITORIALS		
RE-EDUCATING GERMAN WAR CRIPPLES AT DÜSSELDORF. By Douglas C. McMurrie, New York .....		MOBILIZING THE PROFESSION FOR WAR .....		199
PHYSICAL SELECTION IN ITS RELATION TO HEART AND LUNG CONDITIONS. By M. J. Cronin, M.D., Boston .....		THE NEEDS OF THE MEDICAL SERVICE .....		199
A STUDY OF THE KIDNEY FUNCTION IN SENILITY. By W. C. Rappleye, A.B., Foxboro, Mass. ....		WAR RISK INSURANCE .....		200
		MEDICAL NOTES .....		200
THE MASSACHUSETTS MEDICAL SOCIETY				
CLINICAL DEPARTMENT		OFFICERS OF THE SOCIETY AND OF THE DISTRICT MEDICAL SOCIETIES .....		203
A PSYCHOPATHIC CONSTITUTION RESEMBLING SO-CALLED MORAL INSANITY, AND ITS INTERPRETATION. By J. Victor Haberman, A.B., M.D., S.M.D. (Berlin), New York .....		CORRESPONDENCE		
		VESALIUS AND LOUVAIN. Isador H. Coriat, M.D. ....		210
BOOK REVIEWS		OBSTETRICS AND THE MEDICAL PROFESSION. Charles Malone, M.D. ....		210
Radium Therapy in Cancer. By Henry H. Janeway, M.D. ...		MISCELLANY		
Diseases of the Chest and Principles of Physical Diagnosis. By George William Norris, M.D., and Henry R. M. Landis, M.D. ....		A PLAN FOR THE CONSCRIPTION OF PHYSICIANS .....		203
Manual for Institution Libraries. By Carrie E. Scott .....		ENGLISH PIONEERS IN NAVAL MEDICINE .....		206
United States Naval Medical Bulletin, January, 1918 .....		OCCUPATIONAL DISEASES .....		207
		THE MASSACHUSETTS VENEREAL DISEASE PROGRAM. By Eugene R. Kelley, M.D. ....		208

## Address.

### LABORATORY METHODS IN TUBERCULOSIS.\*

By BENJAMIN WHITE, PH.D., OTISVILLE, N.Y.,  
Assistant Director, Bacteriological Laboratories, Department of Health, City of New York.

IN spite of the development of laboratory methods during the past ten years, the diagnostician has received little new aid from the laboratory worker in the detection and treatment of tuberculous infections. The one thing most to be desired has been, and still is, some means for differentiating between tuberculous infection and tuberculous disease, or, in other words, a method for determining the presence or absence of activity in a tuberculous lesion. The results of considerable research activity are encouraging, but the fulfilment of this desire still lies in the future.

The bacteriologist has contributed nothing of first importance, but by refining older procedures of finding tubercle bacilli in the excretions and body fluids he has made it possible to detect a greater percentage of positive cases in the examination of such material. The serologist's contributions are promising, but at present are more of academic interest than of practical value.

The diagnostic aid, therefore, which the laboratory can at present furnish must come from the older and well-tried methods; and in order that the laboratory worker may be spared the

\* Delivered before the Framingham Medical Club and the Community Health and Tuberculosis Demonstration, Dec. 6, 1917.

error and confusion resulting from the many technical modifications recommended in various textbooks, the following brief review has been prepared:

#### I. Staining.

1. The Ziehl-Neelsen method is still the most dependable and most widely applicable of staining procedures for tubercle bacilli. The carbolfuchsin solution should be made from basic fuchsin, which can also be obtained in this country under the name of "aniline red." Of the various decolorizing methods advised, 3% hydrochloric acid in 95% alcohol is sufficiently strong and eliminates the danger of over-decolorization.

2. Hermann's stain frequently gives positive results when the Ziehl method fails, and, in addition, may be used by those workers who are color-blind to red.

#### II. Detection of Tubercle Bacilli.

It should be borne in mind that dead tubercle bacilli stain as well as live forms. Therefore, all glass receptacles used in collecting sputum, urine or other specimens should be previously cleansed with concentrated nitric or sulphuric acid, or in hot sulphuric acid-bichromate solution. Only clean new slides should be used. In order to prevent possible infection to workers, or to preserve specimens which cannot be immediately examined, the sputum may be sterilized by heating in an Arnold sterilizer, or even at 120° C. for 20 minutes in the autoclave. The staining properties of the tubercle bacillus are not appreciably affected.

1. *Sputum.* The direct examination of sputum is adequately described in the textbooks. It is advisable to make smears on slides instead of on cover glasses, because the former give a larger field for search and are less fragile. Where more convenient, the slides may be stained by immersion over-night in carbol-fuchsin in the cold instead of by heating for five minutes.

2. *Concentration of Sputum.* All methods recommended are merely modifications of a neglected method of Biedert, published in the eighties. Antiformin is perhaps the most widely used concentrating (or better, dissolving and homogenizing) agent. Where not purchasable, it may be prepared as follows:

Sol. A. Sodium carbonate .....	15 gms.
Chlorinated lime .....	8 gms.
Distilled water .....	100 cc.
Sol. B. Sodium hydrate .....	15 gms.
Distilled water .....	100 cc.

Take equal parts of A and B (Rosenau).

- To 20 cc. sputum add 65 cc. sterile distilled water and 15 cc. antiformin.
- Shake frequently for 1-2 hours until sputum is homogenized, and allow to sediment.
- Discard supernatant, pipette sediment into centrifuge tube and centrifugalize.
- Discard supernatant, add 0.8% salt solution, mix and centrifugalize. Repeat washing.
- Spread sediment on slide, air dry, fix and stain.

The Ellermann-Erlandsen method gives good results and is of particular service when lack of time causes interruption in carrying out the examination. Recently Petroff has recommended a 4% sodium hydrate solution for homogenizing sputum. In the original Biedert method, 0.2% sodium hydrate was used. A 4% solution is more active and apparently does not interfere with the stainability of the tubercle bacillus.

3. *Blood.* The startling announcement in 1908 that tubercle bacilli could be demonstrated in the blood of individuals suffering with incipient tuberculosis raised high hopes of its value as a diagnostic aid, and inspired new investigations. It has since been shown that the bacilli frequently found in the preparations were undoubtedly saprophytic acid-fasts originating in the distilled water employed. While there is no doubt that tubercle bacilli may appear in the blood stream in miliary tuberculosis, and in the agonal stage of pulmonary disease, their presence, as a rule, is so infrequent that a search for tubercle bacilli in the blood for clinical purposes is not recommended.

### III. Cultivation.

As is well known, tubercle bacilli, when freshly isolated from sputum, feces or animal organs, grow sparsely, if at all, on ordinary nutrient media, but may be propagated on the various egg media. Petroff has advocated the use of a meat infusion egg medium, to which

gentian violet is added for the purpose of inhibiting the growth of secondary or contaminating bacteria. Brilliant green may be substituted to advantage for the gentian violet, and has the advantage of exerting a more marked restraint on the Gram-negative organisms. Recent experiments by one of the author's assistants would seem to show that the inhibiting action of either dye is, at the best, a slight one, and that pure cultures may be obtained as frequently when the dye is omitted from the formula. Griffith has recently recommended that sputum be shaken for a short time with an equal volume of 10% antiformin, and the resulting sediment planted without the neutralization of the alkali. This simple method has been tried out with success.

### IV. Animal Inoculation.

Animal inoculation is still the most reliable and the ultimate test in proving the presence of tubercle bacilli in suspected material. Its disadvantage is the delay incident to the development of the tuberculous infection in the test animal, but if more than one animal is inoculated one may be sacrificed at the end of two or three weeks and early evidence of infection thus obtained. The suspected material may be sedimented or centrifuged if necessary, or treated with antiformin when other bacteria are present. The fluid or emulsified sediment is then injected subcutaneously into the groin.

### V. Secondary Organisms.

Bacteria other than the tubercle bacillus may, at times, be responsible for an aggravation of symptoms in the tuberculous, and may also be the cause of lung infections requiring nice discrimination in order to distinguish them from the tuberculous process. In such cases great care must be exercised in the collection and in the washing of the sputum, because the material examined should represent a morbid product of the infected area itself, free from contaminating mouth organisms. An excellent method is described by Avery and Lyall. The continued absence of tubercle bacilli from sputum of patients exhibiting abnormal symptoms or pulmonary physical signs should lead to a thorough study of the bacterial flora present and to a re-examination of the patient in the various postures described by Garvin. By these means bronchiectasis and sub-pulmonic abscesses may be diagnosed. In syphilis and malignant disease of the lungs the bacterial flora tells little of the true condition. There the continued failure to find tubercle bacilli in the presence of abundant physical signs would naturally suggest the employment of the Wassermann reaction and of the x-ray.

### VI. Serological Methods.

The content of agglutinins, precipitins, lysins and opsinins in the serum of the tuberculous is either too small or else the antibodies themselves are too elusive to enable us to use the usual sero-

logical methods for diagnosis. These immune substances, with proper technic, can be demonstrated, but when it is remembered that the immune mechanism in tuberculosis is to a large degree cellular, it is not surprising that its humoral manifestation is slight.

The Bordet-Gengou phenomenon has been utilized with a variety of modifications for the purpose of demonstrating a complement-fixing antibody in the serum of the tuberculous, and thus determining the presence and activity of a tuberculous lesion. The literature has been reviewed by Craig, to whose article may be added those by Petroff and Miller. There is no doubt that the method of complement-fixation, when properly carried out, yields positive results in the majority of tuberculous individuals tested. It is far from being the valuable diagnostic aid that the Wassermann test is, it tells little of the extent of the lesion, and it fails in the prime requirement of enabling one to distinguish between a healed or inactive lesion, and an open or active disease process.

It is eagerly to be hoped that this method may be so perfected that it will take its place beside the classic Wassermann reaction as one of the laboratory's greatest contributions to clinical medicine.

### Original Articles.

#### THE PROBLEM OF PHYSICAL SELECTION APPLIED TO LARGE NUMBERS OF APPLICANTS.\*

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WITH our declaration of war against Germany and the subsequent passage of the selective draft bill, a difficult problem of physical selection was presented to the medical profession of this country. I speak of it as difficult for several reasons. In the first place, it is not an easy or a pleasant task, even though it be a patriotic one, to assume the burden of sending your patient or your patient's boy, your neighbor or your neighbor's boy, your friend or your friend's boy, into the dangers and horrors of modern warfare. Secondly, the possibility of encountering that type of malingering which skilfully feigns a physical disability, or just as skilfully exaggerates some slight defect, makes the work potential with many trying problems which require time and calm judgment for their solution. The insurance examiner, or the examiner for positions in the public service has to be on his guard only against that type of malingering

which endeavors to conceal physical defects. I am speaking from an experience of eleven years of continuous service as a physical examiner of applicants for public positions, especially for positions in fire and police departments, during which time I have gained some knowledge of the latter type.

I have seen a padded wig worn to increase the height; soap made plastic, and chewing gum, worked in under a thick head of hair; and also, for the same purpose, coin-size pieces of thick orthopedic felt fastened to the heels with adhesive plaster and skilfully concealed from view. Very often I have escaped a deluge of stomach contents, consisting of water, milk and bananas, vomited by an applicant under weight just as he was about to step upon the scales. The arrival of the psychological moment apparently produced emesis. Occasionally, I have incurred the displeasure of an applicant whose varicose veins refused to go into seclusion after a course of soaking in alum water and a few days' rest in bed before the examination, with the legs bandaged from toe to hip. It is interesting to see the confusion of the applicant who has spent days learning the eye test card by heart, when he is asked to read backward the very lines that he has learned, or only the letters pointed to by my assistant, or an altogether different set of letters.

But such malingering is easy to detect, and neither time nor thought is required to make a decision. The problem is more complex when you are dealing with counterfeited defects, because time and keenness of judgment are necessary to reach a just and accurate conclusion. My work is in a field where competition is sharp and where men want jobs; that of the draft physician is in a field where competition is not sharp and where men do not want jobs. In his field, physical defects have in many cases become luxuries, possessions to be jealously guarded; and thus, whereas my archives contain only letters protesting my rejections, the archives of the draft physician contain only those protesting his selections.

There is a story told of an old gentleman who, while walking along the esplanade with a friend, was much disconcerted by the passing show of women, young and not young, fair and otherwise, whose short skirts displayed an over-generous amount of shapely or unsightly calves. Turning in disgust to his friend he remarked, "Thank God, I flourished in the days when legs were a luxury!" Like him, too, I am thankful that I began to flourish as an examiner in the days when legs, good sound legs, were a luxury. The draft physician has begun to flourish in these modern short-skirted days, when, forgetful of the old fighting spirit of our fathers, too many of us were beginning to acquire a spiritual as well as a physical obesity which generously passes over to the other fellow our share of the job of war, and transmutes into luxuries

\* Read before the Charlestown Medical Society, November 19, 1917, also before the Watertown Medical Society, Jan. 9, 1918.

and blessings the inconveniences of unsound legs and of other defects physical.

I do not mean to assert that malingering is the rule, or even that it is always an evidence of dishonesty or lack of patriotism among the applicants. Rather does it seem to me to have its origin in that instinct of domination or pugnacity which in all ages has made men delight to match their strength or wits with one another. But no matter what its cause may be, its presence cannot be denied, and therefore it is unfair to criticize the draft physician who, constantly finding himself on the horns of a dilemma, showed his moral courage by risking censure in reserving his judgment, and gave, as he was told to give, the benefit of the doubt to the Government. He has a right to protest against that criticism which was as needless as it was unethical, and as arrogant as it was discourteous. The medical board with which final decisions rest must necessarily be omnipotent. Their decisions, however, will be less likely to be unkind if they will remember that courtesy, like silence, is golden; that omnipotence is not synonymous with omniscience; and that those who wear the insignia of military rank lose nothing in honor or dignity, when they sweeten the bitterness of criticism with a generous supply of the milk of human kindness. Unfortunately in our profession there are too many who "lack not gall to make oppression bitter."

Accuracy in physical examination depends primarily upon the examiner's knowledge of physical diagnosis and also upon his shrewdness and knowledge of human nature. In the practice of clinical medicine, the presumption of ill-health is uppermost; in work of this kind you must presume that the applicant is sound. In the first case, you start with a known or probably abnormal; in the second, you start with a presumptive normal. Thus, the ordinary mental attitude of the physician is reversed, because while a high percentage of patients are diseased, a high percentage of applicants are healthy and sound. He must especially avoid focussing his attention on minor defects which in no way interfere with the efficiency of robust individuals. Although he is chosen for his knowledge of clinical medicine, he must not forget that he is solving an economic problem in which broad vision and mature judgment are demanded. The examiner, for example, who rejects for flat-foot a good physical specimen whose arches are apparently down but functionally excellent, and passes a mouth-breather, a poorly developed chest, or an arrested tuberculous process, because these cases are sound from a clinical standpoint, has failed to grasp the proper mental attitude of a physical examiner. Furthermore, the physician who goes about this work with the spirit of a sleuth, assuming that every applicant is a malingerer until proven otherwise, lacks that human touch which lightens the burdens of our fellows, and thus by committing judicial suicide, he misses an opportunity to

convert doubters to a belief in the doctrine of the square deal, and instead makes heretics of many who do believe.

It is not my purpose to review the subject of physical diagnosis. I prefer to speak on the practical side and describe what, in my judgment, is an efficient system of physical examination. Such a system must combine speed with accuracy and eliminate the physical and mental wear and tear caused by the monotony resulting from the needless repetition that accompanies unsystematic work. I firmly believe that in the examination of large numbers of men, much more inaccuracy results from the slowness due to lack of organization than from the speed of systematic work.

At the outset I cannot emphasize too much the value of an able clerical assistant and a well selected place of examination. The importance of expert clerical assistance is absolutely necessary, and as I look back over eleven years of work in this field, I cannot help paying a tribute of appreciation to two assistants, one of whom was my mainstay for seven years and the other for four. To them I owe many of the suggestions that are recorded here and which have made a pleasure of a work that was discouraging enough in the beginning. Long ago, the tailor discovered that his finished work was more satisfactory when an assistant wrote down his measurements. Thus he had an opportunity to keep his attention focussed on his main purpose, the creation of a product that was a credit to his skill. He gathered ideas as he made his measurements, because his mental processes were not interrupted. So it is with the examining physician. Distraction tends to make him inaccurate. Hence he should have no clerical work to do during the actual examination, and there should be present in the examination room proper only one physician, his clerk, and those who are being examined.

The examination headquarters must be chosen with care and should consist of two large rooms, communicating or close by, each at least twenty-five feet in length. A table of some kind, large enough for an applicant to recline on should be part of the equipment. It is a mistake to have the quarters crowded with physicians or hangers-on. Confusion and delay result from several physicians examining in the same room. No greater mistake can be made than to have different physicians doing different parts of the examination, or to employ specialists in their various fields. Save your specialists for consulting work on your deferred or borderline cases, in which their judgment is invaluable. The entire physical examination of an applicant should be done by one man, who should allow nothing to retard the speed with which he travels over the shortest road that leads to the accomplishment of his task.

One of the rooms in the examination suite should be used as a combined waiting, dressing, and writing room for the applicants and placed in charge of an assistant clerk. The other



room should be reserved for the actual work of examining. By remaining in this room until the men are ready, the examining physician will avoid the many irritating and distracting arguments that result from his mingling with the applicants. I am assuming that an examiner following my method can do at least fifteen men an hour. These four physicians, each working for two hours at a stretch with the same clerk, can complete one hundred twenty examinations a day. With another examining room and another clerk, four additional physicians would double this output per day. Moreover, since each examiner works only two hours a day, he will not be greatly inconvenienced, or too exhausted to do the same amount of work the following day. If twenty men an hour are notified for each examiner on duty, he will have, allowing for absentees, about the number he is expected to examine per hour. If the applicants are notified half an hour before the examiner is to begin his work, the clerks will have everything ready when he arrives. Even some of this time may be saved by mailing the blanks to be filled out some days before the examination, with the request that they be filled out as directed and sworn to before a justice.

Five men stripped are called into the examiner's room and asked to stand at attention. The clerk arranges their papers in the order in which they stand. Incidentally, I might say that in a short time examiner and clerk will develop the necessary team work. Whatever notes are necessary to make are called out briefly by the physician. When nothing is said it is understood that nothing abnormal is to be noted by the clerk. I take five men in a group because after experimenting with other combinations of more or less men, I found the five-men group system to be the easiest. Speed is not the only advantage gained by examining men in groups. The opportunity given for comparison of physique with physique, of chest with chest, of feet with feet, is an important asset to the physician, inasmuch as his sense of perception is sharpened and his decisions are arrived at more quickly and with greater confidence.

I usually reverse the regular order of procedure and begin with the feet, because, as a rule, it is more advantageous to conduct your examination so that, when possible, the men will not know what part of their anatomy is under observation. With the examiner acting as a leader, the men are asked to put their heels together and toe out as far as possible. This brings the full weight on the longitudinal arch of the foot, giving you immediately any evidence of marked pronation if present. With feet now parallel, they stand on their toes and maintain this attitude for some seconds, when they go up and down several times in rapid succession on their toes. By this time you have some idea of how the feet perform their function. If you are getting a large number of flat-foot rejections, you are probably keeping

out of the service many men whose feet would soon meet all the necessary requirements after a few long hikes in the army shoe. The length of an examiner's experience may be judged by the number of his flat-foot rejections. A large percentage of flat-foot rejections indicates the novice; a small percentage indicates the old-timer who has learned to appreciate the fact that feet are not such stubborn children when rescued from the evil influences of cruel and abusive treatment. Varicose veins, hammer-toe, loss of great toe, webbed toes, knock-knees, atrophies, shortenings, ulcers, old tuberculous hips, knee-joint troubles, and other deformities are quickly noted in seconds of time. Again, with feet together and parallel, they look up towards the ceiling with eyes closed. Since among men of the draft age the tabetic may be present, the Romberg may help you, and it takes only a few seconds. Following this, have them take their positions at arms' length apart and, with eyes closed, try to touch the tips of their forefingers as they swing their extended arms forward on a level with their shoulders. This also may enable you to discover an unstable nervous equilibrium.

Standing close together again, they hold out their hands in front, palms up and with arms completely extended. Missing fingers, eczema or syphilis of the palms, ankylosis of elbow or wrist joints, and any other deformities of the hands or arms that impair the usefulness, or spoil the symmetry of the man in uniform, are discerned. Next, the fingers are flexed and extended several times to test the function of their joints, and rotation of the forearm is tested by turning down the palm.

The arms are now held straight above the head with the backs of the hands together. Shoulder-joint trouble that limits motion, or any other condition that prevents the assuming of this position becomes immediately apparent. Since this attitude tends to keep the abdominal muscles in a state of relaxation, the order to cough is now given, and hernia, if present, is noted. I do not believe that it is necessary, as a routine measure, to insert your finger into every canal, because, if you do, you will fall into the temptation of rejecting many dilated rings. A dilated ring is not a hernia. It may be a potential one, but so is an absolutely closed ring. Varicocele, hydrocele, and undescended testicle are also considered at this point. Varicocele, unless marked, is not a cause for rejection. When it is marked, it is usually accompanied by other causes of rejection, such as varicose veins of the legs and severe hemorrhoids. Hydrocele is at least a temporary rejection until cured by a radical operation. Undescended testicle in men of draft age is usually of no importance, unless the testicle is in the canal or accompanied by a hernia. Epididymitis of tuberculous origin and orchitis of syphilitic origin are of course reasons for absolute rejection; but in the work of recruiting, acute and chronic

epididymitis of gonorrhoeal origin ought not to be a reason for escaping service, and therefore some provision ought to be made to enable the examining physician to keep these cases under observation until he is satisfied that such applicants may be sent to the cantonment or discharged. When one sees how willingly applicants for positions in civil life undergo the expense and inconvenience of operations for hernia, undescended testicle, hydrocele, hammer-toe, and other defects for which operation is the only remedy, he wonders whether it would not be possible, with the coöperation of the civil hospitals, to have such cases receive whatever treatment may be necessary to make them eligible for military service. In the case of varicose veins, you are not so sure that you will not have recurrences after operation. In Massachusetts, after a careful consideration of much evidence for and against, operated varicose veins are now considered an absolute rejection in the cases of applicants for police, fire, and prison service. Abdominal scars tell their own story. Appendix and gall-bladder scars are of no account, but those subjects, under-nourished and of frail physique, presenting the scars of extensive abdominal operations, should be rejected as poor risks. A marked hernia through an operative scar should also be rejected.

Your five men now execute an "about face." Spinal curvatures, the scars of empyema or kidney operations and other defects are noted and considered on their merits. Bending over forward they are inspected for hemorrhoids. This last request may catch off his guard the applicant who has come prepared to simulate the symptoms of a rigid spine. Facing the examiner again, they are told in a few words to have their chests at expiration when he applies the tape to measure the expansion. This process ought not to consume more than a minute and may take less. The expansion measurement is important to the examiner, because it warns him, in those cases of poor expansion, to be on his guard for trouble. The psychological advantage of this system to the examiner is well illustrated here. Every man in the group is going to try to break the expansion record in order to display his prowess before the others. As a rule, even mature men take an innocent pleasure in boasting of their wonderful chest expansions; thus, in the case of these young men, you are being gladly put in possession of valuable advance information. Nothing tries your patience so much as the man who has elected the rôle of a respiratory malingerer. While you are examining him, he tries to keep alive on about a millionth of an inch expansion. Of course you can beat him by asking him to take a run long enough to get him out of breath, but this takes time. A normal chest expansion ought to be about one tenth of the circumference at expiration. At least three inches then are required for most adults. Less than two inches indicates some possible trouble, an adherent pleura, a tu-

berculous process, an emphysema, or chronic bronchitis. A man with a three-inch expansion ought to give you a good respiratory note through your stethoscope. If he doesn't, he is trying to beat you.

Postponing for the time being the heart and lung examination, we proceed to inspect the pupils with the help of a small flash light, which is indispensable to an examining physician. Passing down the line of men from left to right, we try the reaction of the pupils, observing at the same time inequalities, dilatations, contractions, opacities, adhesions of the iris, exophthalmos, nystagmus, strabismus, and pathological conditions of the lids. At this time, pay no attention to anything suspicious, but reserve your judgment and your comments until you are testing the vision. Passing back along the line from right to left, observe the mouth and throat for missing teeth, cleft palate, diseased tonsils, high narrow palatal arch, and mucous patches. You may also look for scars on the tongue, but remember that scars on the tongue are a flimsy piece of evidence on which to base a diagnosis of epilepsy. The test for nasal obstruction is simple, and the mouth breather of the advanced type presents his evidence objectively. The ears may be inspected for chronic discharges, but in this work of the draft, doubtful cases should be deferred for later examination by a specialist. Don't waste time trying to reach a decision on problems the solution of which will test all the skill of a specialist in that particular field. Remember that competence and efficiency are yours if you only recognize conditions that require further investigation.

We are now ready for the examination of the heart and lungs, which to me has always been the most difficult part of the examination, because it is in these border-line cases that one's judgment is put to the severest test. As my colleague, Dr. Cronin, is going to discuss this important subject, I shall speak only about the method of procedure. One constantly engaged in work of this kind finds himself often bothered with sore ears on account of the pressure of his stethoscope. In my early days this was constant and usually assumed the form of a mild furunculosis at the outer ends of the auditory canals. By taking care of my ears, I managed to avoid much discomfort, but they were always raw and chafed when the work was coming fast. I then discovered that it was due to the sudden and rather harsh removal of my stethoscope every time I wished to percuss or talk with an applicant. Moreover, I didn't know anything about ear pieces then. I remember that I used the small variety that fitted too far into the canals, but experience has taught me that you can't have your ear pieces too big. The bigger they are, the better you hear, and the less they irritate your ears.

In the group system of examining, I saw a further opportunity to save my ears—not to mention the saving of energy and time. Teaching men

to breathe properly, if you are examining only one at a time, results in needless repetition and, moreover, it exhausts your store of good nature. With this scheme you teach five men at once. Adjust your stethoscope and go over the hearts and fronts and axillae of your five men. Then have them all turn around and do their backs. All the while you have not removed your stethoscope. You can carry on a conversation or percuss, with your stethoscope in your ears, and you are avoiding sore ears by not continually pulling out and readjusting your ear pieces. Following this you can go over your hearts again, after you have put your men under exertion. Here, again, you save time because you are putting five men instead of one through some vigorous exercise. Examine your men standing up. You can't sit down and do rapid work. If you can't stand up, intensive physical examining is not for you. Although the taking of height and weight is a simple matter, remember that you may save or lose much time on this alone. For work of this kind the so-called office scales are a nuisance. The platform is too small; the beam is graduated for only five or ten pounds; there is a confusion of small weights; your measuring rod fits either too loosely or too tightly into its jacket; and you can't read the height until your applicant steps off the scales. If the rod is loose, it usually slips down and you have to repeat the process. Often, on account of the small size of the platform, a tall man finds it difficult to maintain his equilibrium and puts your platform attachments out of commission. If you happen to have a separate measuring stick, either fixed to the wall, or set up on a small box, don't have it fifteen or twenty feet away from your scales. For this work, the most efficient measuring stick is one that comes in two sections and has a fitted joint. The only objection to this stick is that it is slightly inaccurate on account of the difficulty of holding it exactly perpendicular to the floor. Since in this work of the draft the accuracy required in measuring police applicants is not required, this error may be entirely ignored. By adding a quarter of an inch to the measurement of each applicant, the error will be offset. In other words, with any stick that is not set permanently perpendicular to a horizontal platform, your measurement will be under and never over the exact height.

Don't weigh and measure each man individually. Measure your men first, then weigh them. It saves time because it is good psychology. Have your men turn their backs and pass down behind them with your rod. Less than ten seconds will suffice to get the heights of all. For weighing, I prefer the heavy scales used in business houses. Its beam is graduated up to fifty pounds, and with the one-hundred pound weight on, you have no changing of weights or problems of addition to bother you, as it is necessary to change your weight only when a man

weighing over 150 or 200 lbs. comes along. The only objection to these scales is that you must stoop to read them. This is avoided by the use of a chair.

All this sounds trivial and elementary, but let me say that if a man wants to get an idea of monotony let him take the heights and weights of fifty men on an office scales, taking the height and weight of each man before passing on to the next. I'll venture to say that he can't do it in less than twenty or twenty-five minutes, whereas it ought not to use up ten minutes by the method I have described. Dante has pictured no more dreadful fate than to be condemned for eternity to take the heights and weights of your associates in the hereafter on an office scales the measuring rod of which slips down before you can take your reading. I cannot emphasize too much that it is in the apparently simple parts of the examination that much time is lost. Let no examiner deceive himself that he is thorough because he is slow. His slowness is due to confusion, laziness, or slow mental processes that prevent his arriving at quick decisions.

Vision and hearing remain to be tested. As a matter of fact you have already noted those with defective hearing while giving your orders for the various positions that you ask the men to assume. Thus you are fairly sure of the man who tries malingering. Keeping your men in a row with their backs to your assistant twenty feet away, have him repeat some short expression while you pass down behind the applicants, closing firmly each meatus.

The standard of vision required for drafted men is not high, 20.40 with one eye, and 20.100 with the other. With your men twenty feet from the card, all but one with their backs towards it, begin with the twenty-foot line. Test the right eye first and then the left. This is rather for the convenience of your assistant than for expediting the work. Cover one eye with a card and avoid pressure. I always have my assistant point to the letters that are to be read. The letters on the 20 ft. line of the regular test card are usually A P E O R F D Z. The man with normal vision will of course read them correctly. The slightly astigmatic man may miss one or two but may be safely passed as having practically normal vision. If a man calls P, F; O, C; R, K; or Z, E; he is not trying to mangle. He is astigmatic and in nearly every case will fulfill the minimum requirements. Remember that the astigmatic man who is not myopic will, as I have pointed out above, call the letters by something that proves him to be neither a guesser nor a malingerer. For instance he will always call A, A. He may call the "P" an "F," but you can readily see that there is a resemblance between these two letters. On the other hand, if you have an applicant who calls the letters in the 20 ft. line by something that they do not resemble, he is either myopic—in which case he ought to be able to produce

glasses—or he is malingering. If when you try this same applicant on a 100 ft. and 40 ft. lines, you discover that he can read neither one of these, there is no doubt—assuming that he is a man with education enough to read his newspaper—that he is a malingerer, if he cannot produce his glasses. In work of this kind you usually fix your minimum standard against admitting to the service those who are short-sighted. Your long-sighted man or your moderately astigmatic man is very seldom ruled out by the low standard required for men in the draft. Therefore a slight knowledge of how the astigmatic man's vision reacts to the 20 ft. line will enable you, by the process of elimination, to recognize the myopic or the malingerer. To differentiate between these is, as I have said, not easy unless the myopic man can prove his honesty by showing his concave glasses. If a man says he is blind in one eye and there is no scar or opacity to account for it, try the light reflex. Blindness in one eye abolishes the direct reflex in this eye but the consensual reflex is preserved; *i. e.*, while the pupil of the blind eye does not react to direct stimulus, that of the good eye indirectly reacts when the blind eye is directly stimulated. However, no time should be wasted on doubtful eye cases; and, moreover, no physician should do an applicant the injustice of accusing him of malingering until he has been looked over later by a consulting board of eye specialists and proved to be one.

When a man is rejected for any cause, it is a waste of time to have a second physician repeat the whole physical examination. Rejected and doubtful cases should be called in again at a time set apart for consultation work, and be considered merely from the standpoint of the actual or doubtful physical defect. The syphilitic and the epileptic will very often be passed, and indeed it is useless for any one to maintain that with the ordinary routine of physical examination which is followed today, the passing of such cases is an evidence of carelessness or incompetence.

Such is the outline of a system that has been gradually evolved from a long experience. I give it to you for what it is worth. It is not complex though it may appear to be in the telling. It is, in a word, the simple coöperation of trained medical men with trained clerical assistants. Fifteen men an hour mean four minutes to a man, a saving of six minutes per man against a system in which ten minutes are spent on one examination. For every one-hundred men examined, six hundred minutes or ten hours are saved, in which time many more men can be examined, many rejections verified, and many doubtful cases decided. I have made some suggestions that may not be possible to follow in examining men for the draft. I know that speed is criticized and I know, too, that many so-called lung specialists are shocked at the idea of any one examining the lungs alone in less than half an hour. Is it any wonder that efficiency ex-

perts think us to be most inefficient as a body, especially in the matter of time-saving, and is it any wonder that to a layman was assigned the task in this present war of introducing some time-saving efficiency methods into the very operating rooms of our hospitals?

War, always prodigal of men and their opinions, but ever jealously conserving and absolutely controlling their arts, and crafts, and sciences, always impatient of the old, the sluggish, and the nonessential, but ever demanding the new, the nimble, and only the naked essential, pays but little heed to Chauvinistic opinion or jarring criticism. If you can't applaud, don't snarl; if you can't add, don't subtract; if you can't multiply, don't divide; if you can't raise a quality to the  $n$ th power, don't lower it to the  $n$ th root. If you have a liking for mathematics, here is a definite problem of practical importance. If each draft physician spends one half-hour examining the lungs of each applicant, how long will it take the United States to raise an army of 3,000,000 men?

Because dire necessity has never demanded that in the clinic activity be substituted for inertia, or the sprint for the dog trot, it does not follow that nimble efficiency has not been long knocking at the door. In this supreme national crisis, nimble efficiency *will* not and *cannot* be denied, for on every side the call is for speed and accuracy, energy and quick decision. To War, the medical stand-patter loudly protesting against methods that are not only progressive, but absolutely necessary, is but the sepulchral voice of one puttering in a clinic, and unwittingly burlesquing that old mythological tale of lightning defied, under the delusion that he is Ajax Aesculapius. War only laughs at him, "as the sea laughs at palsy for its billows," because before he blows the assembly call, it has already been decreed in the words of the old proverb, that in his service, for medicine, as well as for industry, commerce, finance, and statesmanship, the race is to the swift and the battle to the strong.

## RE-EDUCATING GERMAN WAR CRIPPLES AT DÜSSELDORF.

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ALTHOUGH there is considerable public opinion in Germany favoring provision for the rehabilitation of disabled soldiers at the expense and under the direction of the imperial government, the work up to the present time has been done under auspices more or less local. The reconstruction institutions have usually been organized and operated through the co-

operation of state authorities, municipal administrations, and private charitable societies.

One of the most interesting examples of a re-educational institute established under such joint auspices is the *Verwundetenschule* at Düsseldorf, the work of which has been very fully described in a recent report. At this school the disabled soldiers are given the special industrial training required to enable them to return to a status of independence and self-support.

Düsseldorf is a hospital center for the Rhine Province. Fifty hospitals are located there. War relief is in the hands of the Headquarters for Voluntary Relief, a society amalgamating the interests of the local Red Cross, the Patriotic Women's League and the city administration. Soon after the war began, a department was formed for vocational advice and training for men wounded in the war. The first plans of this bureau took body in one of the city's school buildings, where in February, 1915, some twenty general educational courses were offered to men able to attend school for a few hours a day.

The idea was that these courses in German, penmanship, spelling, mathematics, civics, book-keeping, and other immediately practical subjects, would give the convalescents a chance to improve themselves and at the same time would give the vocational guidance committee a line on each man's capacity for work when the time came later to train him for a trade. The teachers were from the industrial and commercial secondary schools of Düsseldorf and had their salaries paid from the city budget. Special teachers were secured from among the patients in hospitals or, for this purpose, were released from military service by the authorities. Through coöperation of the provincial government, the city, and the Headquarters for Voluntary Relief, the school was established in suitable buildings, a new building for workshops was erected and equipped with machinery and tools, technical courses for many trades were instituted, and provision made for the maintenance of the pupils.

Where necessary, an allowance is paid to the cripple's dependent family until he is once more earning wages. And it must be remembered that even when that time comes he still receives his pension as a disabled soldier. The pay he may come to earn does not change the amount of his pension, which is determined by the seriousness of his disability. Neither is the fact that he is receiving a pension permitted to influence an employer to underpay him. It is the business of the employment committee to see that war cripples are paid just what they earn—no more, no less.

The work of the vocational guidance committee, particularly of those members who act as friendly advisers to the wounded men, is of primary importance. They come into contact

with the convalescent just at the time when discouragement registers highest and ambition lowest. The one-armed man who was once a carpenter or a stone-mason is sure that he can never again do physical labor. He is thinking vaguely of a civil service job, or, failing that, of some ill-paid, sedentary occupation which takes no skill. Or perhaps he is thinking only of his pension. Sometimes he is a victim of the new war disease "work-sickness," a genuine weakness of the will as regards labor.

The vocational adviser starts a course of will-training by making friends with the patient and persuading him to talk of his past life and of such plans as he may have thought of for the future. Where he was a tradeworker he can usually be interested afresh in his trade. A man who has given up all idea of ever working again as a machinist cheers up considerably upon learning that by taking a course in mechanical engineering at the *Verwundetenschule* he can step into his old shop as foreman. And if formerly the cripple was an unskilled laborer he may get a new grip on ambition on being convinced that the wages and happier interests of a craftsman are within reach. Attendance at the school is wholly voluntary and so is the choice of future occupation, but the vocational advisers try to get each man to make use of his former experience rather than to turn unnecessarily to a strange field.

Courses are given for metal workers, mechanical engineers, telegraphers, electricians, carpenters, cabinet-makers and wood-workers, workers in the building trades, locksmiths, sculptors, stone-cutters, paper-hangers and plasterers, printers, photographers and etchers, bookbinders, cardboard and leather workers, dental mechanics, farmers, minor government employees, stenographers and office workers. The trades-courses prepare for the master-workers' examinations which can be taken at the Düsseldorf Board of Trade. Time spent at the school counts as time spent as a journeyman's apprentice. Examination fees have been waived for war cripples. Also, instead of offering a pretentious sample of work as a "masterpiece," the would-be master worker simply has to prove to his examiners that he can do what has to be done by a first-class workman of his trade. The Board of Trade has provided for a special tradeworkers' course in preparation for the examinations.

It is wonderful, according to the directors of the school, in how short a time an almost helpless man can become efficient. A course of five weeks in hand-training can give him a hand-writing which is said to be free and characteristic. He learns to do things for himself without help: to dress, shave and feed himself, to swim, bowl and put the shot, to handle a typewriter and to use tools with which he is familiar. From eight to ten weeks' training in the machine shops makes him ready for employment. running one of the highly specialized machines

of modern industry. Dr. Karl Gotter, the school's director, holds that in the time required for a cripple's wound to heal he can attain the normal workman's maximum output of labor.

In the hand-training course, one-armed men are taught by one-armed men. By the use of special drawing-boards and instruments, crippled pupils can compete with normal draftsmen. Emphasis is laid on sports and especially on swimming. One pupil recovered the use of a paralyzed lower arm by three months' practice in the water.

Men of the technical courses for the building trades were able to do all the construction work on a seven-thousand-dollar building for the school's workshops, as well as on a set of model three-room apartments erected and fitted for practice. This course fits men to be building carpenters, if they are physically able; or to be draftsmen, foremen or supervisors of roads, streets or waterways. Architectural drafting and building practice go hand in hand. The building is done from working drawings of ground-plan, section and superstructure. The class has instruction and practice in joining, floor-laying, simple plastering and timber-framing, and in the construction of panelled walls, gutters, waste pipes, doors and windows. At the time of the first year's report, five students had passed their examinations as master workers, seventeen others were being prepared for the next examinations and five men were intending to go on for more advanced work to a regular school of building construction.

The work of the mechanic is so varied that no matter what a man's injury he can be fitted in somewhere. If he can no longer be used in the shop he can be trained as a supervisor or can make use of previous experience in one of the administrative departments. Many injured metal-workers take up their trade as draftsmen. The courses in mechanics, physics, electrical engineering, and drafting prepare for these positions, and the machine-shop gives him practice which it would be hard for a cripple to obtain in a factory.

The mechanical workshop of the school has become self-supporting. It fills orders and the pupils are paid a small wage. Pulleys, belt-wheels, bolts, machine-parts, and screws and nuts of all kinds are some of the many things furnished to Rhenish machine factories. The workers in this department are mostly men with stiff or paralyzed arms or with leg injuries. Men with stiff or shortened legs can work well at the turning lathes, although until their wounds heal, they have to take time off for rest. A limp arm is made more supple by filing work. After patient practice, a man who has lost all but the thumb and little finger of one hand was able adequately to grasp with it.

It is not hard to place the wounded soldier who was formerly a printer or photographer. In the classes for men of the graphic trades are

type-setters, compositors and lithographic printers, proof-readers, poster artists and teachers of book-decoration. Some of these, after curative exercises have found that they could go on with what they were doing before the war. A type-setter whose hand had been badly mutilated so that he could not hold his tools, after three months of hand-training could make his stiffened fingers do nearly all the work they had done when perfectly flexible. Two printer's assistants were advanced in their earning ability by theoretical courses. A compositor with a crushed hand has been trained as a proof-reader and now has a good position. Two other compositors were made ready to pass their master workers' examinations. A photographer was prepared to make both line and half-tone plates.

The upholstering and paper-hanging trade is one of the few which has not become a machine trade. For this reason it is the harder to adjust crippled workers to its requirements. One man must usually do many kinds of work, necessitating many and varying motions. However, in Germany the paper-hangers' union has passed resolutions accepting the responsibility of finding work for members now war cripples. Employment in large concerns where it is possible for a man to keep at some one process is a solution for some cases. Others are trained for positions as foremen, estimators and office-workers. Mattress-making is another possible occupation, although to do this a man should be able to work in both sitting and standing positions.

The crippled painter and whitewasher need not feel that he is debarred from ladders and scaffolds. Skill in the use of prostheses will give some men almost as much freedom of movement as before. Where he must look for some less active livelihood he has a choice of several profitable lines. If he has decorative taste the Düsseldorf school prepares him for sign painting, to do stencil work, or to make drawings for painters' firms or pattern factories. If he has no special talent, he can be placed in a wagon factory, furniture factory or metal-ware factory to do painting, varnishing, grinding or leather-scraping. In large plants the men will have work all the year, escaping those months of unemployment which are serious drawbacks of the trade. Men with internal injuries, after taking a course in bookkeeping, can find positions as stock managers, using all their previous knowledge of painting and plastering. The school's business is to fit a man to make just such transitions, often training him to fill a place which has already been offered him by his old employer.

The course for stone-cutters, sculptors, wood-carvers and marble-workers welcomes men who have had no previous experience but whose inclination leads them to try this kind of work. They can be trained as assistants and can be placed according to their injury in some one of the branches of the industry. Stone-workers



who can no longer work in a standing position can be trained to cut inscriptions. Men with internal injuries or with nervous troubles which prevent them from working in a confusing place can find quiet occupation at wood-carving. Men who cannot do heavy work are taught to construct small models, to do plaster-cutting and to make small casts. As in other trades, the man with some natural ability for drawing is the more easily turned to profitable work. One man who had lost his right thumb learned pottery work, firing, the painting of stone vases, and glazing. After his discharge from military service, he expected to go to a school for ceramic arts. An art locksmith who had been shot in the shoulders and for a long time was helpless, learned to design arts and crafts metal work and hoped to be able to execute his designs in the shop. There he would be taught chiseling, chased work and the coloring of metals. The workshop in this course fills commercial orders, and the students are paid for their labor.

Experience in training wounded woodworkers for positions shows that it will be possible to place practically every student. One-armed men or men with paralyzed arms and hands can be used as polishers and stainers or can be prepared for places as draftsmen, designers, foremen, or clerical workers for a workshop. One-legged men can work at the joining bench or at machine-woodworking. It has been found that the injured and paralyzed limbs are soon benefited by a carefully increasing routine of labor. The workshop and machine-shop of this department are equipped with the newest machinery and tools, the machines having individual motor drive. Twenty-four men in the first year passed their master's examination as furniture carpenters and cabinet-makers.

Wounded soldiers who have had experience on railroads or in the postal or telegraph service are usually taught telegraphy, along with the compositions, arithmetic and geography that an operator needs to make him efficient. And while a man is learning the practical technic of operating, he is also studying the theory of electricity and electro-magnetism and familiarizing himself with batteries, circuits and the nature of the Morse instrument. The students learn to set up the elements, to connect them in the circuit, to connect the batteries with the apparatus, install wires between two stations and to locate the trouble when the wires are out of order. In preparation for using the instruments the men are given hand exercises on detached keys. The school has seven sets of instruments and two students work at each, one sending and one receiving. After hand-training, a left-handed man can equal in skill the right-handed operator. Often, too, a cripple can learn to telegraph perfectly with a crippled hand, which grows more and more flexible with use.

In the course for electricians, unskilled workmen are trained for such handy-man jobs as

switchboard operating and armature winding, while men with experience in electrical work or as skilled trade-workers in related occupations are trained to do installation and repairing. The work is subdivided according to the pupil's choice of occupation. The course conforms to the requirements of the German Electricians' Association and a study is made of the most important union rules. The set of three-room model apartments, built by the students of the building-trade courses, is used for practice in installation. Some of these rooms have been plastered and papered by the students of those courses, and others have been kept in the stage of structure-frames only. Each apartment is equipped with a meter and a steel armored conduit. After testing for insulation-resistance, the student-electricians tear down what they have done and do it all over again.

On account of the scarcity of petroleum small towns in Germany feel it a patriotic duty to have electric lighting. For this reason special attention is paid at Düsseldorf to training men to do wiring in the small communities. There has been such a demand for workers in industrial plants, as switchboard operators and armature winders, that wounded soldiers from other provinces have been sent to Düsseldorf for the training. The school now has a large switchboard in connection with direct and alternating current generators and a storage battery. The student learning to operate this at first works from a simple sketch of a switchboard, setting up the connection between a motor, starting-switch, and speed regulator, changing the direction of current flow, and so on through the other processes. He learns to regulate resistance at the main switchboard, and soon comes to know something about the current flow from following the diagram of the plant tacked up over his head.

Without some theoretical training, the war cripple easily becomes confused by the complexity of switches and instruments in a central station. It is harder for him to concentrate because of all the bewildering war experiences he has gone through.

The first students in meter-testing were sent to the school by firms who meant to employ them after training. And now on completion of the school course, when employment has been found for a man at a testing-station, an arrangement is often made for him to take a practical course in the shops of a meter factory. These firms have given apparatus to the school and co-operate with it in every way.

The training of armature-winders was also started by Düsseldorf employers who needed men and applied as a last resort to the employment service of the Headquarters for Voluntary Relief. The school at once began to train a small group of men. After a grounding in theory, which includes a study of the dynamo, the motor, and the construction of the armature, the class



makes sketches of the fundamental armature windings. Preliminary exercise in winding is given on an apparatus made in the carpentry shop. Much of the apparatus used in putting together the armatures is constructed by the learners themselves. Fourteen different types of motors have been repaired and wound for local motor-shops by the class. Starters and other resistance apparatus have also been repaired. An armature-winder must have the use of both hands, but a man who has lost a leg or an eye can easily follow the trade. Since there is much work in an armature-winding room that must be done at a lathe a proportion of its workers must belong to the skilled trades.

Men who have worked in the electrical trade, plumbers, and locksmiths are easily trained for electrical fitting and installation. Low voltage installations can be made by workmen who have no special knowledge of the electrician's trade, but the higher voltage work requires trained men who understand the necessary safety measures. Complete paralysis of an arm or hand excludes a man from the fitting work, but with a partial paralysis he can usually do the work. War cripples preparing for installation work take from three to five months of training. Meter-testers can train in four or five months, and get later their practical experience. A heavy leg injury disqualifies for an installation position, as the worker must be able to climb ladders and mount scaffolds.

There is one comparatively new field of labor in which the demand for workmen promises to be much greater than the supply for some time. That is the dental laboratory where mechanics are needed as assistants, moulding and carving artificial teeth, preparing india rubber and its substitutes, and making repairs in celluloid, aluminum, porcelain, and metal. The work is interesting enough and well enough paid to attract intelligent men, and entails no physical strain. It is especially suited to men with injuries of the lower jaw who should have steady supervision by a dentist. Opinion among German physicians and dentists favors training war cripples into this occupation, and courses have been established at Strassburg and in Frankfurt-am-Main, as well as in Düsseldorf. The plan is not new. Years ago the Central Association of German Dentists suggested giving this teaching to deaf-mutes and this was done in a chain of laboratories, some of which still successfully employ these workmen. Each laboratory is supervised by an expert dentist who makes written pledge that the mechanic will not be allowed to do operative work. Before a man can enter the training course at Düsseldorf his qualifications are most carefully considered by a committee of physicians and dentists. Members of other skilled trades are especially desired for this new trade. Cases of heart trouble, deafness, and injury of the leg and often of the hand can be employed.

The training of a dental mechanic includes the fundamentals of physics and chemistry, human anatomy, and physiology, special attention being given to the structure of the mouth cavity. A study is made of the technic of india rubber, porcelain and metal; of repair work and of dental apparatus. With theoretical instruction goes training in the processes of dental mechanics. Visits are made to instrument factories and to dental laboratories. The course covers a period of nine months.

For the sake of a proper balance in the supply of labor, and for the good of the war cripples themselves, the vocational guides make a brave effort to keep tradeworkers from turning to office work. But after all who can be returned to their old trades have been induced to continue in them, there still remain certain groups for whom clerical training is the only thing practicable. Men who formerly held minor government positions are trained in a course for civil service workers. This is also open to those holding certificates entitling them to civil service jobs after discharge from military service, and to men so severely injured that they cannot do physical labor. This last group is the most motley and pitiful of the Düsseldorf classes. A miner, a weaver from the mountains, a waiter from a little restaurant, a chauffeur—to take such men, shattered in body and disheartened by long illness, to put hope into them and to persist until they have made up their deficiencies and are again ready to take up life with pen and ledger, calls for every ounce of inspiration and man-making ability that both teacher and pupils possess.

Another office course is intended for former travelling salesmen and sales clerks, now forced by injuries to look for office positions, preferably in their old line of business. In addition to the German, bookkeeping, commercial arithmetic, and typewriting offered in all clerical courses, these men are given training in commercial law, business correspondence, and business management, with especial attention paid to the relation between employer and employee. They take up the handling of merchandise, buying and salesmanship, and study every step in the management of an industry from its establishment to the last lawsuit to collect payment for bad debts. For a laboratory the class has a model office where it practises filing, card-cataloging, and the handling of adding-machines and dictagraphs. As an elective, students may take either English or French. From the report, the instructor keeps peacefully to the good old standard subjects such as "The Weather," "The Clock," and "What We Use in School."

A ten-weeks' course for office assistants aims to return men formerly employed in the workshops of large industries to the same shops as stock-clerks, accountants, or clerical shop-workers of one kind or another. Here compli-

cated bookkeeping is not needed. All that is essential is to make the workman familiar with technical office terms and processes; to give him such experience as he might by good luck pick up in the employ of a firm. For practice this class actually conducts all the business of the school workshops. About one-fourth of the class studying during the first year were promised work by their former employers.

Of course Germany has a back-to-the-land movement for wounded soldiers. With the co-operation of the Department of Agriculture, farm settlements for war cripples have already been started and are being managed by land companies. All that the wounded soldier has to do, once he has satisfied the authorities that his place is on a farm, is to report with his wife and family at the settlement to which he is assigned. The company will have allotted him the use of as many acres as the authorities decide that he can cultivate. It will build him a house and outbuildings and will have made arrangements for marketing his produce along with that of the rest of the community. If he has capital, he may own his own place; or, he may purchase it as soon as he is able.

The agricultural course at Düsseldorf corresponds to the short winter courses which German agricultural schools offer to farmers. It is intended for wounded farmers who would like to know more than they do know, and for men who would like some agricultural pursuit in addition to their regular occupation. For instance, a rural letter-carrier or a signalman can very well add to his income by poultry-raising, gardening or bee-keeping. Courses are given in farm management, plant cultivation, animal husbandry, business correspondence, and agricultural arithmetic. While there is no school farm for the use of students, arrangements are made for them to work on agricultural estates, in dairies, and in poultry establishments.

Of the occupations which may be carried on at home, small farming is perhaps the happiest and most profitable for the cripple. Its interests and physical activities are varied and may be adapted to each man's capacity. And the farmer's market is inevitable—it is created by public need and not by public sympathy. The other home industries are not so dependable. So far they seem to be industrial compromises, although there are, of course, instances of home industries like the Worpsaed carpets and the Black Forest wood-carvings which are genuine and profitable contributions to the world's productivity. Certain war cripples will be obliged to work at home if they are to work at all. Cases of serious paralysis, of total blindness, tuberculosis, epilepsy and extreme nervousness require attendance, periods of rest and isolation. Work will make them happier, but it must be carefully selected, not too exacting, and not too monotonous. What are these men to do?

The home industries which at present offer some real chance of a livelihood are knitting, weaving, wood-carving, basketry (including the making of wicker furniture), knotting work, and metal-working. But in every one of these crafts the crippled worker needs protection against under-payment. He should be provided with a market, prices should be adjusted for him, and, above all, he should be taught how to make articles which people will really want.

So far, what Düsseldorf offers of most value for such workers is a plan. Dr. Karl Gotter proposes that a certain number of home industries be organized under the management of a society financed by public subscription and by government appropriation. At a central training school the cripples can be maintained until they are skilled enough to work at home, but after they go home they will be visited regularly by a travelling teacher or inspector, who will keep the products up to an artistic and workmanlike standard, teach the men new things about their craft, and encourage original work. The articles produced will be advertised and sold at sales-stations managed by the society. Under such an arrangement home-manufactured goods would have an equal chance with commercial goods at popularity and good prices.

Of the 2,000 men who attended school the first year, about 600 were placed in employment. A good proportion were taken back by their old employers. The need of workmen is now so great that the employment bureau can easily find work for cripples trained to a definite occupation. The real test of the school will come after the war, when the disabled workman has to meet the competition of the returned soldier who is sound and vigorous.

In the old days—and in the United States most of us have been living in the old days as far as treatment of the crippled worker is concerned—the wage-earner who became physically disabled was compelled to move one or two steps down the labor ladder, and, in consequence, down the social ladder too. The main concept which has been developed in the re-educational schools is that the cripple must move up. There is more room for him in the upper rungs than at the bottom. And he can be quickly taught to climb.

## PHYSICAL SELECTION IN ITS RELATION TO HEART AND LUNG CONDITIONS.\*

BY M. J. CRONIN, M.D., BOSTON.

THAT most eminent physician, Sir William Osler,<sup>1</sup> has recently said: "In the grim game of war, bullets and bacilli put men out of action, and the best general is the one who has the lowest percentage of wastage by the former with as little as possible from the latter. An outstanding feature of the present war has been a reversal of the usual proportion of killed and

\* Read before the Charlestown Medical Society, November 19, 1917.

wounded to those who have died from disease. But there is another group, the unfit, who should be checked at the recruiting office, as they furnish a large contingent in our hospitals and add a needless burden of transport, care and pension.

"What I desire to urge, in a few words, is the necessity of stopping at its source this group. It is impossible to deal with all types of unfit men, but let me briefly indicate those who should be kept at home.

"First, the Mouth Breather. 'Shut your mouth and save your life' is the title of Kit Catlin's famous pamphlet, which should be reprinted every few years for distribution. The original title of the pamphlet just referred to was 'The Breath of Life,' and Nature meant this to pass through the nose, an organ which, medically speaking, reaches to the diaphragm. Blocked nostrils mean: (1) Weakened tonsils and pharyngeal resistance; (2) Enormously increased liability to bronchitis and catarrhal troubles of all sorts, and (3) lowered defense against the pneumococcus group. The hospitals have had to bear the strain of caring for hundreds of these men who should never have passed the examining board. No matter how good his chest, or how keen he is to go, or how good his muscles, be merciful to the Army and keep the mouth breather at home. Campaigning is not for him.

"Second, the Hippocratic Chest, as it may be called,—long, narrow, thin and with, as so often happens, the vertically placed low heart. Cut out unsparingly the owners of these. If lungs and heart are not in a good 'case,' the head is of no use in war.

"It may seem very saucy for a man who has never been trained to examine recruits to venture to give advice to his superiors, but this brief note of warning is sent to my colleagues in the United States in the hope that they may profit by the experience of one whose work has been largely with the wastage of the recruiting office."

These remarks are very pertinent to the subject which I am to discuss. Furthermore, they strongly emphasize the fact that the ability of the soldier to withstand the strain and shock of modern warfare depends in great part upon the soundness and integrity of the organs situated within the thoracic cavity.

The selection of men for military service from among a people engaged only in the pursuits of peace for the past fifty years requires the physical examination of a large number in the shortest possible time. Therefore, in conducting examinations, the examiner must combine speed, thoroughness, and accuracy of judgment. There are those who doubt that this combination is possible without sacrificing thoroughness and accuracy of judgment to speed, but after a trial of the group method, as outlined by Dr. Downing, I am convinced that it can be done. In

support of this contention the following, from an editorial in THE BOSTON MEDICAL AND SURGICAL JOURNAL,<sup>2</sup> is of interest: "Rapid examinations do not mean snapshot diagnosis, but merely the passing of rapid judgments upon facts actually presented to the examiner. Doubt is often unjustly engendered by lingering too long upon a state of fact that will otherwise be rapidly and accurately disposed of. To be effective in this work, the examiner must only learn to make a diagnosis when the facts are before him; must develop his powers of observation; must learn to be quick in making his decisions,—indecision is fatal everywhere; must learn to pass the rare and interesting cases by just as quickly as the ordinary one; and must learn not to spend too much time between each examination. The whole matter of thorough examinations, combined with speed, resolves itself into the elimination of time waste and duplication. These two elements mastered, no amount of speed is to be feared. What advantage is the lengthening out of the time of examination, if it is at the cost of repetitions of hearing, seeing and feeling? The medical examiner must be able to see when he sees, hear when he hears, and feel when he feels, without repeating every sensory impression to make sure that it is so."

If a tuberculous process is found at either apex, why waste time trying to locate another process at the base? Or if valvular heart disease is discovered, why bother to see whether there is an enlarged liver or edema of the lower extremities? It is only necessary to take sufficient time to enable one to describe briefly the defect which is a cause for rejection.

Past history has no place in these examinations except as confirmatory evidence, after examination has revealed some defect or suspicion of defect. For example, if an abnormality or suspicion of abnormality is discovered, a few questions may bring forth a history of susceptibility to attacks of bronchitis, either alone or associated with asthma, of pleurisy, or of a cough extending over a long period. With heart murmurs, the history of frequent attacks of tonsillitis or rheumatism may be elicited. In aortic lesions inquiry may reveal the history of past syphilitic infection, which it is well known has a distinct liking for the aortic orifice. But as a rule decisions are rendered almost wholly upon objective evidence.

#### *Inspection.*

This, to my mind, is very important, as it reveals much in a minimum of time. Almost at a glance can one take in any evident departure from the normal from the eyes to the waist line; the degree of robustness; muscular development; the eyes for exophthalmos; mouth breathing; neck for enlarged thyroid and lymphatic glands; chest characteristics,—whether of the vigorous, robust type, or the long, thin, flat type, so indicative of delicate constitution; the barrel-

shaped chest of emphysema; and signs of retraction of the supra- or infraclavicular spaces. A deep breath will reveal any inequality in the expansion of the chest or of the apices, and also furnish an estimate of the air capacity of the lungs. Actual measurements of chest expansion afford the most accurate information as to lung capacity. An expansion under two inches should arouse some suspicion of lung defect. The normal subject of draft age, however, should do three inches or better.

Percussion I believe to be of minor importance. What has been said in regard to history applies to percussion as well. Its use is secondary to auscultation and necessary only when auscultation reveals some abnormality.

#### *Auscultation.*

It is necessary to auscult only the bases, axillae and tops above the third rib in front and the mid-scapular behind. With ten or a dozen good breaths an opinion can be formed as to lung condition which will be accurate ninety-nine times out of a hundred. This applies to the normal chest and to marked abnormalities. The doubtful or border-line case of course demands more time, but I have been impressed with the fact that the more prolonged investigations do not materially change the first impressions.

The steps just outlined are all elementary, but after examining a large number of men in a short space of time, I am convinced more than ever that the application of these fundamental principles makes for speed, accuracy and greater efficiency than the slower methods of the tuberculosis clinic. In other words, the methods of the clinic or consulting-room must be replaced by an appreciation of what is required and by the application of common sense.

On the assumption that all subjects are likely to experience active service in trench warfare, the following non-tuberculous conditions found in the chest constitute causes for rejection: *First.* Subjects showing developmental defect of the thorax associated with an apparent delicate constitution, even in the absence of definite disease. Such men are underweight, have poor resistance and consequently are poor risks. *Second.* The mouth breather, with, as Osler says, a susceptibility to all kinds of respiratory infections. *Third.* Emphysema of any grade, even without coexistent bronchitis. *Fourth.* Chronic bronchitis and asthmatics. *Fifth.* Those showing any sequelae of empyema, sunken chest of any degree, diminished expansion of the affected side, or any signs showing the lung tied to the thoracic wall by adhesions.

#### TUBERCULOUS CONDITIONS.

*First.* The old fibroid case, usually of poor physique, feeble respiratory murmur, and with or without râles. *Second.* Any subject showing the slightest suspicion of an active process. In many instances an active process is discovered in an otherwise robust man, and one is often

surprised when with the first breath there is revealed the harsh, or broncho-vesicular respiratory sound with a few fine râles. The more advanced cases can be easily recognized. *Third.* The arrested case. Inspection may or may not show a retracted apex; the respiratory sound may be from harsh to almost pure bronchial and unaccompanied by râles; the general condition may be good. Such individuals, however, have a latent infection and sooner or later, under the strain of actual service, an active process may start up. We are told that an accentuated second pulmonic sound is one of the diagnostic signs in these border-line cases. These cases are oftentimes difficult to classify. A decision can be reached only after the objective evidence has been carefully reviewed. It is here that past history, if reliable, would assist.

This work differs from clinical work in that there is not the same opportunity for continued observation and study. Deferred examinations and consultations should be the rule with draft boards, and thus the interests of both the Government and the individual would be better conserved.

To define just what constitutes tuberculosis is difficult, if not impossible. It is now believed that the infection is primary in the bronchial glands and thence extends to the lungs. Bronchial gland tuberculosis may exist without apparent auscultatory signs in the chest. If so, the subject is not likely to present the picture of vigorous manhood, and it is better for the interests of both country and individual to reject such cases on suspicion than to pass a man on to his doom from physical breakdown from the strain of war. No doubt there will be those rejected who should go and, on the other hand, some may be sent who should be retained. One hundred per cent. efficiency cannot be secured until the would-be soldier has had the advantage of at least six months to test his physical endurance.

#### THE HEART.

The normal heart can be judged in seconds of time, also those unfit for service because of valvular disease. When rapid heart action is found, if hyper-thyroidism, myocarditis, and disease of the lung can be eliminated, we conclude that the rapidity is due to psychic causes and therefore we may safely select the man for service. The slight systolic murmur often encountered with tachycardia is of no consequence. A definite accentuation of the pulmonic second sound or a short snappy first sound should always suggest mitral disease or some pulmonary lesion. A sharp accentuation of the aortic second sound suggests high blood pressure. While a high blood pressure is not always associated with an accentuated aortic second sound, blood pressure reading should always be taken in these cases in order to rule out a nephritis or the cardiovascular effects of syphilitic infection. A slight murmur associated with definite

enlargement or displaced apex and accentuation of second sounds means valvular disease and therefore a cause for rejection. A slight degree of mitral stenosis may give rise to a murmur so faint that it may be distinctly audible only after exercise or when recumbent.

Largely by its sound does the heart tell us whether or not it is able to perform properly its functions. Any defect in itself is revealed by an adventitious sound or murmur. But there are murmurs *and* murmurs. Let us consider them and see if we can distinguish between an important and an unimportant murmur. Are some murmurs organic and others functional or accidental? If so, how interpret them?

There is no standard upon which to base the diagnosis of functional murmur. The textbooks tell us that these murmurs are almost always systolic in time: they are usually heard in the second left interspace and at the apex; they are soft in character and variable in intensity, and are rarely transmitted; they are not associated with accentuation of the pulmonic second sound or with hypertrophy of the left ventricle. In Nothnagel's encyclopedia of practical medicine,<sup>8</sup> is the following: "It is true that hemic murmurs are usually very soft, but the same thing is occasionally observed in cases of true insufficiency. Systolic murmurs are heard quite often without obvious or even distinct signs of anemia and without any cause to justify the assumption of a functional valvular disturbance." Cabot<sup>9</sup> says: "They are especially apt to be associated with anemia, although the connection between anemia and functional heart murmurs is by no means as close as has often been supposed. The severest types of anemia, for example, pernicious anemia, may not be accompanied by any murmur, while, on the other hand, typical functional murmurs are often heard in patients where the blood is normal, and even in full health." Sir James Mackenzie<sup>10</sup> says: "As a young man I told people with heart murmurs that they were in a bad way; but they did not die, and I began to separate the murmurs—the innocent ones from those of importance. Some murmurs might mean anything, and the man might be in perfect health. He had seen a lad who had been rejected on account of heart murmurs. He found that he was the leading athlete of his school and that the following day he won a prize for running the longest race in record time. Men were continually being rejected for life insurance through heart murmurs. He gave a certificate to a man who had been rejected seven times. That man has now been in the fighting and is quite well." Far be it from me to doubt any statement of Mackenzie's in regard to the heart, but what one man with a heart murmur may have done in the fighting is not a safe criterion by which to judge hundreds or thousands of other men who may show similar murmurs.

Life insurance is a business proposition. The medical directors of the strongest and best com-

panies practically agree that it is impossible to differentiate between a functional and an organic heart murmur. One medical director states as follows<sup>6</sup>: "The only sure differentiation is made by the subsequent history of the individual. If the murmur disappears permanently, then the presumption is that it was a functional murmur. As long as an applicant shows a murmur of any kind we do not consider it safe to accept him." These conclusions on the part of life insurance companies are based on statistics. Statistics are cold economic facts which are not subject to change as are medical opinions.

Galli,<sup>7</sup> chief of the special medical service for soldiers with heart affections in the Italian Army, states that evidences of arteriosclerosis of the aorta and coronaries were found in 45% of 60 young soldiers supposedly entirely healthy when killed.

Parkinson<sup>8</sup> found that over 50% of 90 soldiers sent back from the front on account of cardiac insufficiency had signs of it before enrollment. In only five had the first symptoms developed after an acute infection. In 30% there was valvular trouble recognized before enrollment in all but three. He comments on the frequency of latent heart disease among civilians, the result of some infection early in life, saying that while it may remain latent indefinitely in civil life, it flares up under the stress of military service.

Mintz<sup>9</sup> says: "The heart, even with a well-compensated defect, responds differently to excitation (pulse rate, blood pressure) from the sound heart. If we consider the accentuation of the second pulmonary sound with overburdening of the heart an index of its functional capacity, then we must arrive at the conclusion that the reserve force of the heart, even with perfect compensation, is limited and small. Accepting this, it follows as a matter of course that men with even slight heart defects cannot be utilized for military service."

We have all seen patients showing a slight systolic murmur at apex or base, which we considered of no importance, and which we were unwilling to call either functional or organic, preferring rather to let time render the decision. For years some of these cases may not develop any signs of cardiac distress, while others develop well-marked valvular lesions, which in some instances, under strain—pregnancy, for example—reveal the classical signs of true valvular disease.

Therefore, while murmurs are found which may seem of slight importance, there are no definite standards by which they can be designated as functional. Consequently, in this particular work, it is safer to assume that these murmurs indicate a latent heart infection; that at some time in the past life of these individuals, slight structural changes causing a murmur have resulted from an inflammatory process of mild degree. I firmly believe that in this work of ex-

aming recruits, the spirit of fairness underlying the selective draft act is nullified in many cases by the consideration of this mythical, so-called functional murmur.

Our country is confronted with the task of rapidly raising an army large enough to be a force in this gigantic world-struggle. Such an army requires a degree of physical health much greater than for active work in civil life. Thus in its selection, physical examination becomes a matter of the greatest importance, because it is solving, on the one hand, a problem of preventive medicine and on the other an equally important one of economics. The man with tuberculosis may infect his fellows. In such an event the expense of their equipment, training, transportation and maintenance, as well as that of his, represents a useless outlay of the nation's resources, and in addition there must be considered the further expense of care, and of pensions for disability incurred in line of duty.

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## A STUDY OF THE KIDNEY FUNCTION IN SENILITY.

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To quote a recent publication, "death follows on account of the insufficiency of the excretory process, therefore the limit of life is a matter of excretion," is to express a rather general notion which medical men have come to have. Old age is considered by many to be a chronic, incurable disease, associated in large part with, or caused by, a diminution of kidney function.

This study is an inquiry into the functional conditions of the kidneys in late life, designed in part as an assistance in the interpretation of post-mortem findings in cases coming to such a study. A group of 41 patients was studied, in which group the ages ranged from 70 to 88 years. None of the patients had shown any fever, dyspnoea, edema or other signs within a period which could in any way be considered as influencing the findings in this study. The hemoglobin of all the patients ranged between 75% and 100%. The blood cytology was essentially normal. A great majority of the patients studied were active, not only working about the wards, but most of them have been engaged in manual labor or in the industrial rooms. On the whole, the coöperation of the patients was

good indeed, despite the fact that every one was psychotic. It is true, however, that the more complicated tests, such as the two-hour test, could not be carried out.

The features that were studied in this group were the blood urea, expressed as blood urea nitrogen, blood pressure, phenolsulphonephthalein test for renal function and the urinalysis. The blood urea nitrogen was determined by the Marshall urease method. The soy beans were ground, dried, powdered and sieved, giving a stable, easily handled enzyme. The aeration and titration method was used in determining the amount of urea nitrogen in the sample of blood used (5 cc.). In every case the blood was drawn in the morning before breakfast, twelve to fourteen hours after the preceding meal. This plan of obtaining the blood so long after the preceding meal fails, of course, in securing evidence of slight retardation in the excretion of urea, as might well be expected in these cases. But the plan does give values which are independent of the food intake and gives an idea of the constant level of blood urea characteristic of the individual. Blood taken on different days, and at considerable intervals on the same patient, has shown very close approximations of the urea nitrogen on these different occasions, as the appended tables show. The blood pressure readings were taken in the mid-afternoon by means of a mercury manometer. The values given are either the average of several readings, where the readings were fairly uniform, or several readings taken on different occasions, where the different readings have not been so close. The phenolsulphonephthalein test of Rountree and Geraghty was used in the usual manner. It is worthy of note that the standard solutions used in this test should be made up frequently, as they fade even when carefully sealed. This applies in my experience only to the standards made up in the laboratory, not to the sealed standards of purchased colorimeters. The urinary examination was done in a routine manner; no special attempt was made to find casts, for instance. The two-hour test meal studies could not be carried out on these cases, nor could an investigation of the quantity of the day and night urine be conveniently made. However, it is a distinct impression, judging from the few cases in which the latter was studied, that there is in most cases an increase in the night volume. Tests, such as the elimination of lactose, potassium iodide, methylene blue, indigo-carmin, etc., were not applied nor was the action of diuretics investigated.

## DISCUSSION OF THE RESULTS.

Using the blood urea nitrogen as a criterion, there was found evidence in this group of a mild degree of retention in a number of cases,—about 50%. Just what value of blood urea nitrogen is to be considered normal influences, of course, one's opinion whether there is or is not reten-



tion in a given case. In all the cases I have studied, the preceding meal can have little to do with the figure. During the course of over 100 blood urea determinations in other connections on younger individuals who were on the same hospital diet and routine, the blood being taken, as in this study, before breakfast, I found no value over 16 milligrams (in cases free from demonstrable kidney insufficiency) and only 3 over 15 milligrams per 100 cc. of blood. Two of these cases showing a value over 15 milligrams were on cases whose blood urea nitrogen had been done at least 15 times, so I have come to consider that under the conditions of diet, etc., here, the upper value for normal blood urea nitrogen is about 15 milligrams. I realize this value is at variance with figures given by others, but under the conditions here, it is seldom that a blood urea nitrogen value of over 15 milligrams is found. The usual values range from 9 to 14 milligrams per 100 cc. of blood.

Turning to the blood pressure readings: of the 40 cases in which both systolic and diastolic readings were taken there were 21 cases which showed a systolic pressure of 160 mm. or over. There were 28 cases showing a diastolic reading of 85 mm. or over and 23 cases with a diastolic reading of 90 mm. or over. Of 19 cases showing a blood urea nitrogen of 16 mgm. per 100 cc. or over, 7 showed a systolic pressure of 160 mm. or over, whereas in this same group of 19 patients, there were 15 who had a diastolic blood pressure of 85+ mm. and 12 with a diastolic pressure of 90+ mm. If a diastolic reading of 85 to 90 mm. is considered as much a relative elevation of diastolic pressure as 160 mm. is an elevation of systolic pressure, then it is evident that a retention, judging from the blood urea nitrogen, is associated with an elevated diastolic pressure about twice as frequently as it is with an elevated systolic pressure. This is an observation made very frequently and one which has been given considerable emphasis. It is a correct observation, but in the cases studied here, including another larger series in which the elevated blood pressure was the criterion of selection, a low blood urea nitrogen is just as likely to be accompanied by a high diastolic blood pressure as is a high blood urea nitrogen. Nor can it be said that an elevated blood pressure—either systolic or diastolic—allows a prediction that the blood urea nitrogen is elevated, for only about 50% of the cases with a high blood pressure show a high urea nitrogen (see tables).

When the renal function is considered (i.e., the phenolsulphonephthalein output), there appears to be little, if any, relation between the rate of elimination of the dye and the value of the blood pressure. Fourteen of the nineteen cases showing a high blood urea nitrogen have an average rate of elimination within 5% of those cases showing a more normal value of blood urea nitrogen. When the renal function test values are examined, it is evident, espe-

cially with the lower percentages of excretion, that the low rates of excretion of the dye are associated for the most part with a high urea nitrogen. When, however, there is a poor elimination of phenolsulphonephthalein, associated with a normal blood urea nitrogen, there is usually a high diastolic blood pressure. Here, again, one looks upon an elevated diastolic blood pressure as significant, but an examination of the diastolic blood pressure in cases with a good elimination of the dye shows that many of these cases, too, have a high diastolic reading.

On urinary examination there was found albumin in 10 cases (25%). This finding had little relationship to the other determinations. Casts were readily found in routine examination in a majority of the cases (a frequent observation but pointing, of course, to damaged kidneys). None of the cases showed glycosuria, although several of the cases did show a moderate hyperglycemia (not reported upon). There was little inability of the kidneys to pass a urine of reasonably high specific gravity on demand.

Five of the six cases of this series have been autopsied, several dying too early in the study for complete figures to be obtained. These five cases have shown, as usual, extensive arteriosclerosis and fibrosis of the liver, heart, spleen and other organs and gross evidences of chronic interstitial nephritis. Two of the cases showed very extensive destruction of the renal architecture. Since permission for post-mortem study can be obtained in the majority of the cases dying in the hospital, it is hoped that this ante-mortem inquiry may be of some assistance in later studies.

#### SUMMARY.

The present study was made on a group of 41 patients, whose ages ranged from 70 to 88 years. These patients were free from gross evidences of renal insufficiency or other compromising conditions (fever, edema, dyspnea, anemia of note, etc.) and most of them were active workers.

Under the conditions of diet and hospital routine here, the upper normal value of blood urea nitrogen is considered as 15 to 16 mgm. per 100 cc., the blood being drawn before breakfast, 12 to 14 hours after the preceding meal.

Fifty per cent. of the cases studied showed a moderate degree of retention, using the blood urea nitrogen figures as a criterion.

Fifty per cent. of the cases showed a systolic blood pressure of 160 mm. or over; a higher percentage showed a diastolic pressure of 85-90 mm. or over. The blood pressure readings cannot be said to be related to either the blood urea nitrogen or to the rate of elimination of phenolsulphonephthalein.

In 27 cases in which the elimination of phenolsulphonephthalein was determined, 13 showed a value of 40% or lower; 9 of these were 35% or lower. A low value of elimination of



No.	AGE	BLOOD UREA NITROGEN	BLOOD PRESSURE	URINE				RENAL FUNCTION
				Spec Grav.	Alb.	Sug.	Blood Sediment	
448	71	17.36	165-95 140-70	1010	0	0	0 Rare hyal. cast	55% 35% (1916)
261	78	11.2	152-80 140-80	1014-22	0	0	0 Hyal. and gran. casts	uncoop.
131	74	8.4	160-95 140-85	1012-18	0	0	0 Rare hyal. cast	50%
319	77	12.12	180-90 150-85	1024	0	0	0 Few cylindroids—no casts	45%
337	72	20.2	130-70	1020	sl. tr.	0	0 Gran. casts	15%
28	71	16.2	140-90	1010	s.p.t.	0	0 Occ. hyal. cast	40%
467	79	18.5	128-80	1025	0	0	0 Few gran. casts	40%
427	79	10.1	120-84	1025	sl. tr.	0	0 Few gran. casts	incont.
		11.2						
		15.1						
448	87	23.3	120-60	1024	0	0	0 Pus, no casts	15%
		29.9						
472	74	14.0	180-100 150-95	1020	0	0	0 Occ. hyal. cast	35% 35% (1916)
		13.7						
		14.6						
107	77	17.9	160-80 168-95	1013-22	0	0	0 Rare hyal. cast	55% 70% (1916)
		15.7						
519	75	15.4	200-110 150-110	1004-28	0	0	0 Occ. hyal. cast	60%
		13.2						
466	76	11.2	106-52	1020-30	0	0	0 Gran. and hyal. casts	60%
		15.9						
*715	73	7.3	160	1020	trace	0	0 Hyal. and gran. casts	....
313	73	10.6	185-105	1022	0	0	0 Rare hyal. cast	35%
		13.4	190-120					
67	73	ref.	210-120	1016-30	0	0	0 Few hyal. and gran. casts	uncoop.
235	73	13.4	190-95 180-90	1010-14	0	0	0 No casts	55%
		15.1						
		9.24						
110	71	12.9	200-120	1020	0	0	0 Few hyal. and gran. casts	45%
		11.8						
		13.4						
*106	83	20.2	215-100	1020-24	0	0	0 Occ. hyal. casts	25%
*136	70	34.8	270-160	1010-22	0	0	0 Many gran. and hyal. casts	45% (1916)
143	75	12.3	180-100	1011-20	0	0	0 Rare hyal. cast	disch.
509	87	8.7	240-90 180-95	1016-18	0	0	0 Few gran. casts	65%
		16.9						
432	70	21.8	230-100	1018	0	0	0 No casts	disch.
		16.8						
240	88	16.8	200-140 180-115	1008-22	0	0	0 Occ. gran. and hyal. casts	uncoop.
		16.8						
341	73	uncoop.	130-90	1014	s.p.t.	0	0 Occ. hyal. cast	uncoop.
437	78	14.0	145-82	1022	trace	0	0 Numer. hyal. and gran. casts	30%
407	71	21.8	118-80 130-90	1020	0	0	0 Many hyal. and gran. casts	60%
		19.0						
		17.4						
242	70	16.5	150-90 170-115	1000-12	0	0	0 Gran. casts	30%
		15.96						
*859	86	...	180-78	1020	sl. tr.	0	0 No casts	....
408	76	11.7	165-75	1004-20	0	0	0 Hyal. and gran. casts	35%
284	74	20.7	160-100 130-75	1005-30	0	0	0 Gran. casts	55%
		15.4						
40	73	15.4	130-70	1022	s.p.t.	0	0 No casts	uncoop.
		15.96						
776	71	23.0	150-95	1012-20	0	0	0 Few gran. casts	30%
		23.5						
41	77	16.24	180-100 150-70	1014	0	0	0 Rare hyal. cast	uncoop.
		15.4						
334	70	22.4	166-88 135-75	1012-24	s.p.t.	0	0 Hyal. and gran. casts	60%
		15.4						
404	70	16.0	140-100 160-90	1016	0	0	0 Rare hyal. casts	50%
		15.4						
*469	82	...	140-75	1020-25	0	0	0 No casts	....
764	81	15.1	180-90 240-130	1018-20	sl. tr.	0	0 Occ. hyal. cast and pus	uncoop.
		15.4						
		20.3						
*277	70	16.3	180-120 200-90	1015-21	0	0	0 Hyal. and gran. casts	....
		17.6						
853	76	17.6	170-80	1035-18	0	0	0 Few gran. casts	40%
278	70	12.8	195-100 170-85	1012-22	0	0	0 Few hyal. casts	40%

\* Died; autopsies have been done on Nos. 715, 106, 136, 469 and 277.

the dye is associated for the most part with an elevated blood urea nitrogen. A good excretion is related for the most part with a relatively low blood urea nitrogen.

Twenty-five per cent. of the cases showed albumin in the urine. There were no cases of glycosuria or hematuria. Practically all of the cases showed casts—a customary observation.

Sixty-six per cent. of the cases showed either an elevated blood urea nitrogen or a depressed value of phenolsulphonaphthalein elimination (40% or lower). If one disregards the findings of only a few casts in the urine and disregards the blood pressure also, it can be said that, in the group of patients studied, about 70-75% show easily demonstrable evidences of kidney insufficiency.

It will be noted that in this group there are several cases showing a relatively low blood urea nitrogen and a good renal function, but which have a considerable elevation of blood pressure, the so-called cases of "essential" hypertension.

### Clinical Department.

#### A PSYCHOPATHIC CONSTITUTION RESEMBLING SO-CALLED MORAL INSANITY, AND ITS INTERPRETATION.

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AN exceptionally interesting boy was sent to me for examination and diagnosis in June, and his case again placed before me the month after, his conduct bringing him into the Childrer's Court.\* As this is a type of child so frequently mislabeled "feeble-minded," and even more often "degenerate," "moral imbecile," or "moral delinquent," and yet in reality is none of these, but just a "psychopathic constitution," I feel that the report of the case and its psycho-clinical interpretation might prove instructive.†

Master John X. is 10 years and 6 months old, born in America of foreign parents, the latter apparently of fairly good stock. The father was a sailor, his own people sound and considered bright (all having obtained positions rather over the average). The mother, who brought the boy, is an intelligent woman, giving no sign of nervousness or psychopathy. Her account may be summarized as follows:

\* This child, in the charge of Miss Gregory of the Public Education Association, was referred to me by Prof. Heckman, of the Dept. of Pedagogy, C. C. N. Y. The case came up before Justice Levy of the Children's Court in July, for which trial this report was prepared.

† For a full study of the Degenerate, Born Delinquency, etc., see the author's paper on this subject in "The Archives of Diagnosis," New York, April, 1917.

The boy's heredity, she believes, is entirely negative (the only abnormality noted is the father's being ambidextrous). Her own fraternity and that of her husband and their children (the patient's cousins) are all normal. She herself has two other living children that are healthy, and had one still-birth in the 6-7th month. No miscarriages.

The patient was born prematurely (in the 7th month), weighing but 3½ pounds, and showed a nasal deformity (thought at the time to be possibly an abnormality of the septum or cartilages). Everything else negative. The child picked up rapidly and walked, talked and teething at the normal time. He never had a high temperature nor a convulsion. An operation was done on the nose at the age of four to clear the obstruction and, if possible, find out the cause of the trouble (a tumor was suspected, but none found). The wound healed very slowly. There were two or three later operations on the nose.

The present complaints (given by the mother) are serious and rather unusual: The boy frequently loses grip on himself. For days at a time acts as under a drug; seems dazed. Fancies everyone is against him, especially the boys at his school. Has a "terrible" temper. Getting worse. When excited, jumbles his words. Has attacks of rage. If he does not get what he wishes, goes into spasms in which he fumes, gets blue, tears and breaks things. Tore a large mass of hair out of his sister's head on one occasion. Once cut somebody's wrist with a large knife while in such a tantrum. Lies "dreadfully." Says he tries to stop it but cannot. Steals money and things. Appears to have no memory. Can recall nothing. Has two sisters and has difficulty in remembering their names; frequently gets the names confused. (No doubt due to dissociation and dispersive attention. Memory tests proved negative.) Cannot concentrate at all; a fly, for instance, will distract him and keep him from playing, studying or working. Is very restless in his sleep, throws himself about, constantly grinds his teeth. In school evidences strong erethism, talks much, constantly asks questions, moves about the room. Accomplishes nothing. Strongly constipated.

#### Additional Facts.

Never keeps a promise.

This morning he took a picture not belonging to him. Swore he hadn't it. Said to his mother, "Mother, I'd be put into hell, the Lord would not have me in Heaven if I took it." And yet later the mother found the picture on him. He knew that it was wrong.

He also tried to get his sister to take things. Once, when 8½ years old, made his sister take something, saying he'd kill her if she didn't.

Likes to play with fire. Twice set the house on fire (the last time three years ago). Just wanted to see the flames. His mother, to cure him, burned his finger with a match. This seemed to help some, but still likes to play with matches.

If left alone will go through drawers, meddle with the clock, the hot irons, etc.

Has run away three times; last time two years ago. Took subway to end of road and then walked a long distance. An officer found him and brought him to the station. There he said he would not go home; that he was badly mistreated, etc. On my questioning him why he did this, he answered that

his teacher said if he did not come back the next day with clean covers and clean book, she'd hit him. "So I ran away and told the story to the police to get farther away—I expected to go far, far away." Later added, "How could I have clean covers and book if they were dirty?"

Is pathologically lazy. Will not undress himself at night; rather goes to bed with his clothes on. Will frequently rather soil himself than go to the toilet, it being too troublesome to undo his clothes. If given toys to play with, as "Mechano Set," asks, "Must I do this?" Everything is an effort.

Two months ago was in the cellar and said there was a big black shadow following him—even pointed it out to his mother in the bedroom, where it was in front of him; described it as standing still when he moved. Persisted in this for several days. Wanted to investigate it and got angry that none of the others could see it. Later said it left—wasn't there any more.

#### *Further Incidentals of Psychopathy.*

Nocturnal enuresis up to a year ago, constant; now once in a while. Headaches occasionally severe (not of migraine type). Is fearful of the dark and of being alone at night. Once, recently, strongly suspected of sleepwalking. Is supposed to have prowled around his father's shop. There was considerable evidence of this, but the boy denied any knowledge of same.

#### *Etiology.*

The heredity appears to be negative. The husband, however, was a sailor (up to the breaking out of war), and it is possible that he took up this vocation because of a trend to instability or a roving disposition. This is frequently but by no means always the case. Hence the possibility of the father's having been psychopathic.

The prematurity in the seventh month, weighing  $3\frac{1}{2}$  pounds, points to the more probable reason for the brain abnormality. The brain, if undeveloped at time of birth but uninjured, usually develops to the normal after birth—if the deficit is not too great; here the underweight denotes the severity of the condition, and the fact that the head at present is from one-half to three-quarters of a centimeter smaller than it should be (intimating that the brain has not grown to normal size). But this is not all. There must have been a reason for this prematurity and underdevelopment. This surmise is substantiated in the deformity of the nose at birth. There was no point to the nose and the nostril was obstructed on one side; it was thought that the cartilage must be pressed inwardly, or later (age of 4) that a tumor was present. Hence the subsequent operations. (The above facts bring up the possibility of congenital syphilis.)

The nasal obstruction itself may have played a baneful part in the general mental development (restricted aeration, etc., but especially in affecting the attention), also the operations themselves, the wound healing with difficulty. (Aprosexia nasalis.)

At the age of 2 the child fell down stairs. Though not unconscious, he lay quiet for a long time; appeared dazed for several weeks afterward. His mother states that he now seemed to unlearn much that he had learned and had to be re-taught. Up to this period she thought him normal, bright and sweet-tempered. After the fall he changed, seemed backward, developed an intense temper in which he would throw himself on the

floor, kick, scream and get blue. At times he was almost frantic, "as if out of his mind."

At about this same time the mother had to leave the home in order to nurse her husband, ill at the hospital. In the interim, three months, the child was in the care of an inferior nurse who taught him to masturbate and whose influence was generally bad. The masturbation continued up to the age of four.

#### *Pedagogic History.*

The boy has been in several schools (five in all) and in sixteen different classes since entering kindergarten (6. 19. 12.) He thinks mostly in German (the language spoken in his home) and translates to English as he speaks. This is constantly noticed. It is also very evident in his writing, which is extremely poor. One also readily sees that the boy thinks best and quickest in German.

#### *Home Environment.*

Very moderate circumstances but rather good surroundings. Mother appears firm and intelligent.

#### *Examination.*

Visceral and neurological examination negative, save that coördination of the movements of the left upper extremity is not as good as it should be (especially finger-to-nose test).

General development good. Appearance negative save for the nose which appears somewhat "pressed in." Head girth is slightly below normal—51 centimeters. Palate is abnormally high and somewhat narrow. Teeth are poor, the lower row unevenly planted. (Has abnormal folds at the tonsillar end of the gums?) Enlarged postcervical glands on the right.

Spine shows slight scoliosis (and some abnormality between scapulae?) X-ray negative.

The nasal deformity, high palate and poorly planted teeth are possibly to be looked upon as *stigmata* of hereditary taint.

There is no evidence of endocrinopathy.

There is no evidence of vagal or sympathetic involvement.

Several things suggest syphilis and hence this must *vet* be ruled out: the prematurity, low weight at birth and dysplasia (nose), and the mother having had a still born child in the 6-7 month.

#### *Intelligence.*

According to the examination made by both Prof. Heckman and myself, the general average of intelligence is up to the proper mark. As to ethical and moral understanding and feeling, my own tests prove the boy to be quite normal. His answers to my questions were bright and sharp and evidenced real feeling. In fact, asked to tell what good deeds he had already done, his accounts, whether truthful or not, show him to have a better understanding of the hardships of poor people and feeling for this than many a normal child of his age.

His attention is dispersive; concentration very poor.

#### *Diagnosis.*

We have in this boy a brain very probably hereditarily invalidated—no doubt, the primary factor. Added to this (and possibly of equal etiological moment?) is the prematurity and, because of the extreme underdevelopment at birth,  $3\frac{1}{2}$  lbs., a post-natal development that finally fell short of the full

unfolding (incomplete myelogenization, or smallness of cells, or fewer association fibres?) evidenced by the skull (brain) being slightly smaller than normal; possibly, also, by the high, narrow palate.

The fact, however, that this child walked, talked, and teathed at the proper time makes it possible to assume that the brain here *did* reach its full and proper maturity, in spite of the small skull girth, and that the hereditary taint alone must be considered in the above. What this taint was, whether psychopathy, incompatibility of the germ plasms (Moebius), or syphilis, cannot absolutely be said.†

This already invalidated brain, and therefore less resistant than the normal, is now still further unstabilized by a series of conditions and traumata, namely, nasal obstruction, three or four nasal operations, an unhealing nasal wound (this must have been a very severe drain on the child's attention), a serious fall downstairs (concussion?) a two years' period of masturbation (which may harm a delicate brain organization, but, on the other hand again, may not be of much moment), and evidently an interim of poor or perverted influence in the hands of an inferior nurse—and the lack of parental control during this period—and, finally, an unfortunate pedagogical training with many changes of schools and classes and the boy learning to *think* in German.

Consequent upon all this, we have a *mental abnormality* showing itself here not in a lack of abnormality of intelligence, but in functional deviation in the sphere of emotion, affectivity and will (namely of the character and personality constituents), *i.e.*, *psychopathy*. This boy, then, is a psychopathic constitution and of the affective type ("affective psychopathic constitution").§

Dissociations and occasional hallucinations, as this boy shows, are not infrequent in these individuals. They sometimes also have "large" epileptic attacks—the "affect epilepsy" of Bratz (which our patient however is not subject to).

The unethical tendencies are to be accounted for through psychopathy, that is, little or no inhibition, in this case, of impellants along the lines of least resistance. Such minds react to every wish, whim or suggestion—whether it be right or wrong—and react the more easily under emotion or affect (deeds of violence being even possible in the daze of strong affectivity). This boy thoroughly comprehends the difference between right and wrong and has good general ethical insight and even evidences real, deep feeling. But he has no will with which to act counter to his inclinations and desires. He covers his tracks through lying—lying having become common habit with him. A lively fantasy only adds

† Even if this boy gives no W. R., his abnormality might be occasioned by syphilis in his ascendants, he himself not being syphilitic. "Thus many a juvenile malefactor has to thank his miserable state to the unstable nervous system bequeathed him by the syphilis of an ancestor." See our study on Hereditary Syphilis, Jour. A. M. A., March 8, 1915, p. 1141. As yet it has not been possible to obtain a W.R. on either the boy or his parents.

§ Should this boy give a positive Wassermann reaction, the diagnosis will be no different, only we shall be informed as to the cause behind the trouble. Antisyphilitic treatment in that case will, of course, be imperative.

to the mischief. There is no defect here of any "ethical sense," nor "ethical inferiority," because of mental enfeeblement, nor is this a case of ethical warp through lack of home training, seduction, etc.

The strongly abnormal laziness is an unusual accompaniment and difficult to explain unless it be again a manifestation of lack of will to do aught necessitating effort and not in the line of inclination or desire.

#### Prognosis.

The case must be looked upon as a serious one, and one in which both special training, treatment and the closest supervision will be needful for a long period of time. Under these conditions, there is a likelihood of the boy evening out into normality. Should this child grow up without such special training, treatment and supervision, his natural course will be the most direct pathway to criminality.

But how dispose of such cases? The institutions for the feeble-minded are not the place for them, for they are not feeble-minded, and would not only benefit in no wise from such a sojourn, but would surely corrupt and contaminate every witless member of the community. Nor is reformatory or prison the place to send them, for though they have perfect knowledge of right and wrong, they are, nevertheless, quite irresponsible for their acts and hence not deserving of punishment; nor does punishment help such psychopaths in the slightest; indeed, it rather breeds resentment in them, fosters desperate moods, and intensifies their already abnormal affectivity. And as for sending them to the asylum, that is, least of all, a fit commitment, for they are not insane, have not even partial trends to alienation, and must needs degenerate and decay in so abnormal an environment.

Through the Children's Court and the benevolence and fine insight of its judges, many such unfortunates are spotted and sent to industrial school farms, and in that way are very well, though not ideally, looked after. But the greatest number do not come before the children's courts and are not individually cared for until they are adults and have grown so mentally awry as to be beyond the stage of educational correction. Both through tax burdens in supporting its overcrowded derelict cantonments and in the actual loss and suffering occasioned by these psychopaths, society pays dearly for its sin in not sifting out its abnormals in their childhood days, when they could still be succored,\* and establishing suitable institutions for their temporary maintenance and special training. This for all of us—physician, teacher, justice and citizen—is a most timely problem and a serious and urgent one.

\* How this can be done in the schools was suggested by the writer some years ago—"Clinical Psychology in Its Relation to the School and to Social Medicine," Med. Record, Nov. 20, 1915.

### Book Reviews.

*Radium Therapy in Cancer.* By HENRY H. JANEWAY, M.D., with the discussion of Treatment of Cancer of the Bladder and Prostate by BENJAMIN S. BARRINGER, M.D.; and an Introduction upon the Physics of Radium by GIOACCHINO FAILLA, E.E., A.M. New York: Paul B. Hoeber. 1917.

This volume represents the first report of the use of radium therapy at the Memorial Hospital, New York. The author states that while there are many available reports of the use of radium in cancer, a more accurate description of the methods of applying radium to malignant tumors in different situations is needed in order that good results may be duplicated. In his experience the use of radium emanation has greatly increased the efficiency of radium therapy as compared to the use of the metal itself. For a satisfactory understanding of these advantages, as well as the principles of application and filtration, an acquaintance with the physics of radium is indispensable. It has, therefore, been deemed advisable to include in this report an introduction explaining in detail the physical considerations relative to the therapeutic application of radium. The book is well illustrated by eighteen half-tones and diagrams, and is extremely interesting from a clinical point of view.

*Diseases of the Chest and Principles of Physical Diagnosis.* By GEORGE WILLIAM NORRIS, A.B., M.D., and HENRY R. M. LANDIS, A.B., M.D. New York: W. B. Saunders Company. 1917.

This book consists of a volume of nearly 800 pages attractively bound, with excellent type and illustrations. The reviewer has nothing but commendation for this book. The numerous illustrations alone make it of very great value. It presents the subjects of pulmonary and cardiac functions from the only logical point of view, the pathological side first, and with this as a basis takes up the clinical aspects of diseases of the heart and lungs. The numerous plates of frozen sections showing the pathological anatomy of the various conditions under discussion, demonstrate more clearly than could be done in any other way, the causes for the various signs and symptoms associated with diseases of these organs. The reasons for the so-called "physiological right apex," for instance, are made clear and distinct, and the causes of the various murmurs in valvular disease of the heart are demonstrated by actual photographs of the diseased valves and by diagrams.

The amount of information given in this volume is enormous, and yet it is divided and sub-divided, so that any student or practitioner

can easily find the details concerning the particular subject in which he is interested. It is difficult to imagine how the presentation of this important and difficult subject, Diseases of the Chest, could possibly have been improved upon, and the writers are to be congratulated upon what the reviewer considers a notable achievement. This book may be highly recommended to students, general practitioners and specialists alike.

*Manual for Institution Libraries.* Compiled by CARRIE E. SCOTT. Chicago: American Library Association Publishing Board.

This monograph, published as Handbook No. 10 of the American Library Association Committee on library work in hospitals and in charitable and correctional institutions, is intended for the instruction of institution librarians without previous library training on the selection, arrangement, cataloging, distribution and preservation of books.

These questions are discussed under the headings: Book Selection (including titles of reliable book lists, paragraphs on book funds, editions, suitability, the proportion of fiction and non-fiction); furniture and fittings; mending and binding; the care and distribution of periodicals; classification, cataloging and loan system, with illustrations of sample book and request cards. Appended is a list of supplies needed in the library with addresses of reliable firms.

Altogether, it is a very complete and satisfactory little handbook, combining, as it does, in practical detail, the experience of all these hospitals and other institutions of the country, which have coöperated with the compilers by answering questions regarding methods and results in their own libraries.

To the untrained hospital librarian (and there are few others) such a handbook is indispensable. Happily, the hospitals are waking up to the importance of a good library as a therapeutic agent, and are learning that, to be efficient, this library must be organized; that without some system the best library is simply a mass of books, while with it, it becomes an important department of the hospital. It is because of a sympathetic realization of the difficulties of the untrained librarian that this Manual has been compiled.

*United States Naval Medical Bulletin*, January, 1918. Washington, D. C.

This bulletin, published for the information of the medical department of the service, issues an especially noteworthy number for January. An appreciation of Theodor Kocher by one of his pupils, Dr. Arnold C. Klebs, of Washington, D.C., appears in the historical department, and a picture of Theodor Kocher begins the volume. Among the special articles is one by Gaston Houzel Médecin Aide Major 1<sup>re</sup> Classe, French Army, on "Treatment of Fractures of the Thigh

by the Gassette Apparatus;" another by Assistant Surgeon E. R. Noyes, U.S.N., on the preparation of Dakin solution, and an article by Surgeon W. N. McDonell, U.S.N., on Dakin's Solution and the Carrel Technique for Infected Wounds. The department of progress is especially interesting with its reports on military medicine.

*The New System of Gynecology.* Edited by THOMAS WATTS EDEN, M.D., F.R.C.S.E., F.R.C.S., Temp. Major, R.A.M.C., Vice-President of Section of Obstetrics and Gynecology of Royal Society of Medicine; Obstetric Physician, Charing Cross Hospital; Surgeon, Chelsea Hospital for Women; and CUTHBERT LOCKYER, M.D., B.S., F.R.C.S., F.R.C.P., Vice-President of Section of Obstetrics and Gynecology of Royal Society of Medicine; Obstetric Physician to Out-patients, Charing Cross Hospital; Surgeon to In-patients, Samaritan Free Hospital for Women. In three volumes. With numerous illustrations in color, and in black and white. Limited. London: MacMillan & Company. 1917.

This work represents the most ambitious effort in gynecological literature in the English language, and immediately attracts attention. Its scope and the array of contributing editors, under editors-in-chief Thomas W. Eden and Cuthbert Lockyer, arouse hopes of a production worthy of the contributions to Gynecology by British investigators and authors.

In volume I, a number of general topics are treated: anatomy, physiology, malformations, disorders of function, methods of examination of gynecological patients, types of micro-organisms found in the female genito-urinary tract, and infections, sepsis, gonorrhea, tuberculosis, syphilis. There are also chapters on inflammatory affections of the fallopian tubes, and ectopic gestation.

In volume II, diseases of the genital organs are taken up,—of the vulva, vagina, uterus, cysts and tumors of the fallopian tubes, and tumors of the ovary.

In volume III, are considered diseases of the breast, vermiform appendix, infections of the urinary tract, as well as methods of examination of the urethra and bladder, hernia in women, and diseases of the rectum. About three-fourths of the third volume is devoted to therapeutics, chiefly operative, with separate chapters devoted to general gynecological therapeutics, to the x-ray and to radium in gynecological practice.

In a work of this extent, three volumes, fifty authors and over twenty-five hundred pages, there is naturally some repetition or overlapping of topics, some disagreement and some unevenness in merit of presentation. Not all the

views are based on the most recent and thorough investigations. But the standards maintained are unusually high and the work has been produced under trying conditions and deserves high praise. Only six of the authors are from outside the British Isles.

Among the articles which it is especial pleasure to read are Disorders of Function by Blair Bell; Myoma and Adenomyoma of the Uterus, a masterly presentation by Cuthbert Lockyer; Cancer of the Uterus by Wilson, and Chorionepithelioma by Teacher.

The arrangement of the work is not altogether satisfactory and numerous slight changes would be desirable. There are references to some of the most important articles in the literature, and each volume has an adequate index.

The press work is excellent, the illustrations very numerous and the colored plates of considerable, some of great, merit.

In spite of many excellences in the work, the reviewer closes the last volume with a feeling of disappointment because the book does not fulfill the promise of its title, a System of Gynecology. It is comprehensive enough, but not sufficiently systematic nor exhaustive. Each chapter should be a systematic and exhaustive consideration of the subject of that chapter, quite up to date, with a just and discriminating statement of varying views, if there is not unanimity of opinion among authorities, with references to the original articles where these views are expressed. Certain chapters do fully meet these requirements. But too often the text suggests inflation of the usual textbook in Gynecology instead of revealing the insight and the touch of the master.

*Clinical Surgical Diagnosis for Students and Practitioners.* BY F. DE QUERVAIN, Professor of Surgery and Director of the Surgical Clinic at the University of Basle. With 604 illustrations and 5 plates. Second English edition. Translated from the fifth edition by J. SNOWMAN, M.D. New York: William Wood & Company. 1917.

This second English edition of 800 pages, and well printed, translated from the fifth edition by de Quervain, contains all that was so justly praised in the previous review of the previous edition, together with nearly 100 new illustrations, revision of all chapters, rewriting of the chapter on Stomach and Duodenum, and the addition of a final chapter devoted exclusively to Diagnostic Problems in Connection with the Military Surgery of the Limbs.

The reviewer considers this book the best single volume on clinical diagnosis with which he is familiar, and can recommend it without reserve to advanced students and practising surgeons.

# THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, FEBRUARY 7, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 125 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

## MOBILIZING THE PROFESSION FOR WAR.

UNTIL the entire medical profession of the United States, or at least those who are mentally and physically fit and within the age limit, is mobilized within the Medical Reserve Corps of the United States Army, not until then can we give to the Surgeon-General that efficiency which he so badly needs in having a large body of medical officers upon whom to draw.

You may never be called; at the same time your joining the Medical Reserve Corps and placing your services at the command of your country, clearly indicates the patriotism which the medical profession, as a whole, should evince and which we must manifest if we are to win the war.

Every doctor must realize that success depends upon a carefully selected and thoroughly trained body of medical officers. By careful selection, we mean the placing of a medical

officer in a position where he is best fitted for the service; and only by having an immense corps or the entire profession mobilized upon a war basis, can we serve our country to the best possible advantage.

This mobilization of the entire profession should come from within the body itself, but every physician coming within the requirements of the service, as to age and physical fitness, should seriously consider this suggestion, and not wait for complete mobilization, but apply at once for a commission in the Medical Reserve Corps of the United States Army.

It is not only for the combatant forces that medical officers are required, but for sanitation, hospital camps, cantonments, and in other departments where the health and life of the forces are dependent upon the medical officer.

We have within the profession a sufficient number of doctors to meet fully the requirements of the Surgeon-General's office, whatever they might be; but to be of service, you must join the Medical Reserve Corps to enable you to meet the appeal which is now being made for a large and efficient Medical Reserve Corps, upon which the Surgeon-General may draw as requirements demand.

## THE NEEDS OF THE MEDICAL SERVICE.

UNDER the above caption, Lieut.-Col. R. E. Noble, M. C., U.S.A., presented before the latest meeting of the Southern Medical Association an admirable paper which convincingly answers the many questions asked of the Department, which have caused perplexing hours of thought with many doctors. This communication appears in full in the December issue of the *Southern Medical Journal*, and should be read by every doctor in the country. In a previous paper by the same writer, presented prior to the time that the United States entered the war, as in the above-mentioned communication, Col. Noble said:

"On the medical profession rests a heavy responsibility, for with the medical profession rests the subject of medical preparedness."

This is a particularly impressive paragraph and pregnant with truth, and its meaning should sink deep into the heart of every doctor in America. What was a fact before we entered the struggle is more than a fact now, since we



have joined forces with our Allies in a world war, which will be terminated only by the success of our arms.

We have not a sufficient number of medical officers to care for the combatant and other forces now in training. With the new draft soon to be called, and the possibility of the raising of an army of between five and ten million, as has been authoritatively foreshadowed, we would repeat, "On the medical profession rests a heavy responsibility, for with the medical profession rests the subject of medical preparedness."

The responsibility of the medical profession of the United States, and its importance in the successful outcome of the war, cannot be too forcibly impressed upon every doctor who is mentally and physically fit and within the age limit. They are urged to offer their services now.

That the Surgeon-General should have an immense corps of Medical Reserve Officers upon which to draw, enabling him to place the individual where he will be best fitted for the service, is manifestly apparent. This will mean efficiency, and by efficiency alone can the responsibility now resting upon the medical profession of this country be lessened.

Let every physician apply immediately for a commission in the Medical Reserve Corps and thus discharge the responsibility which he owes to his country, his profession and himself.

#### WAR-RISK INSURANCE.

IN conjunction with our previous editorials on the subject of war-risk insurance, comes a letter from the Treasury Department of the United States, in Washington, urging the desirability for all men in the service, for the protection of their families, to carry war-risk insurance. The letter says in part:

"To safeguard America's gallant soldiers and sailors and their families, it is imperative that our fighting forces avail themselves of the full privileges conferred by the Military and Naval Insurance Act.

For his own benefit and for the benefit of his family, every enlisted man and officer in the Army and Navy should take the full \$10,000 of insurance. Insurance of almost \$4,000,000,000 has already been applied for, but this great total is only a beginning. America's Army and Navy should be 100% insured.

The necessity of prompt application cannot be emphasized too strongly. Persons in service before October 15, 1917, must apply on or before February 12, 1918. Those who joined after October 15, 1917, have 120 days from the date of enlistment in which to apply.

With the details of this insurance plan you are already familiar. The unprecedented advantages and privileges conferred by the Government and the extraordinarily low cost have been explained to all men now in the service. All that is needed now is vigorous publicity to speed up applications before February 12. In this work your aid is indispensable."

#### MEDICAL NOTES.

BRITISH NEW YEAR HONORS.—The list of honors bestowed on New Year's Day of this year may be looked upon as a war honor roll. Among those honored with the order of Knighthood are: Sir C. A. Ballance, Sir G. L. Cheatle, Sir T. Crisp English, Sir Archibald Garrod, Sir J. M. Irwin, Sir W. G. Macpherson, Sir J. Maher, Sir W. H. Norman, Sir M. W. Russell, and Sir J. P. Stewart. The following list also contains the names of those who have served their country at home or in the colonies, and of members of the navy and army medical departments who have directly contributed to successes in the field. In the list of new Knights are the names of Dr. Barclay Josiah Baron, Lord Mayor of Bristol, consulting physician to the throat and nose department of the Bristol General Hospital; Dr. Thomas J. Horder, assistant physician to St. Bartholomew's Hospital and physician to the Cancer Hospital, in whose hands clinical pathology has made some valuable advances; Dr. John Phillips, professor emeritus of obstetric medicine in King's College; Mr. Harold J. Stiles, surgeon to the Edinburgh Hospital for Sick Children and to the Chalmers Hospital, Edinburgh; and Major Andrew Macphail, C.A.M.C., professor of the history of medicine in the McGill University, Montreal. Sir George Newman, principal medical officer to the Board of Education, has been made a K.C.B. In the Royal Victorian Order, Sir Bertrand E. Dawson, K.C.V.O., C.B., has been promoted to a Knight Grand Cross; Lieutenant-Colonel H. M. Rigby, R.A.M.C., has been made a K.C.V.O.; and Staff-Surgeon Louis Greig, R.N., a Member of the Order. In the Order of the Indian Empire, Lieutenant-Colonel and Brevet-Colonel H. F. Cleveland, V.H.S., Deputy Director-General of the Indian Medical Service; Lieutenant-Colonel H. Smith, I.M.S., Civil Surgeon at Amritsar; Major H. C. Brown, I.M.S., Director of the Central Research Institute at Kasauli; and Assistant Surgeon Kedar Nath Das, professor of midwifery at the Campbell

Medical School, Calcutta, have each received a Companionship.

**CONFIRMATION OF CALIFORNIA MEDICAL LICENSE ACT.**—The United States Supreme Court has declared constitutional the California state medical practice act, providing for licensing and regulating persons engaged in healing the sick.

**BRITISH OPHTHALMOLOGICAL SOCIETY.**—The annual congress of the Ophthalmological Society of the United Kingdom will be held on May 2, 3, and 4, 1918, in London, England. A museum will be held at the Royal Society of Medicine, with a special exhibition of perimeters.

**LONDON DEATH RATES.**—Mortality rates for the cities and boroughs of London for the month of November show that the lowest rate occurred in Hampstead, and the highest in Shore-ditch, the respective rates being 8.5 and 25.2.

**SPANISH MEDICAL SOCIETY IN NEW YORK.**—An association of Spanish-speaking doctors practising in New York has been formed and named *La Sociedad Medica Hispania-Americana*. The secretaries are Drs. Manuel Uribe y Troncoso and Anibal Zelaya.

**LONGEVITY IN AUSTRALIA.**—*The British Medical Journal* contributes a statement of some interesting longevity statistics from Australia.

"At the census of 1881, children under the age of 15 represented 38.9% of the total population of the Commonwealth, the proportion for subsequent censuses being 36.9 in 1891, 35.1 in 1901, and 31.6 in 1911. At the census of 1881, persons aged 70 and upwards represented 1.3% of the population, 1.5% in 1891, 2.1% in 1901, and 2.6% in 1911. These figures afforded evidence of the increasing age of the population of Australia. The influence of the South African war in 1901 on the age statistics was shown by the fact that, while males between the ages of 20 and 30 represented 20.5% of the total male population in 1891, and 18.7% in 1911, they represented only 17.3% in 1901. The high proportion at this age in 1891 is attributed to the large amount of immigration which took place during the preceding ten years."

**AMERICAN SOCIETY FOR THE CONTROL OF CANCER.**—The American Society for the Control of Cancer issues once a month a bulletin called "Campaign Notes," chronicling the progress of its work. The first number appeared in January, 1918. The Society considers one of the greatest achievements of the past year has been the publication by the Census Bureau of the special report on cancer mortality in the United States Registration Area. The preparation of this report was suggested by the Society, and its statistical experts were frequently consulted in its development.

"As it is unquestionably the most complete and detailed compilation of cancer mortality statistics ever published by any government, the Society feels a just pride in its publication. The report has proved of inestimable value as a source of reference for the members of our lecture staff who have secured copies by application to the Census Bureau in the name of the Society.

The collection of reports of cancer cases submitted by surgeons in the statistical study undertaken by the Society has been continued, and there is now on file at the National Office a very valuable amount of data which, when further augmented, will serve as the basis of important special investigations."

#### WAR NOTES.

**VENEREAL INFECTION.**—The following communication, printed in the *London Times*, reveals a condition of affairs as regards the proper care of venereal disease among British troops which compares far from favorably with that in practice in the United States Army:

"Sir,—Since the publication of my letter to you on December 27 I have had several more inquiries from Army officers, both combatant and medical, of which the following extract from a letter just received from the front is a fair example:

"I am taking the liberty of asking you for details of the disinfectants you mention. My reason for asking is that medical officers give different answers, and that recently officers have been ordered to speak to their men on these questions. Definite instructions would, therefore, be of obvious value."

I shall be grateful if you will insert this letter in order that the large number of persons now actively interested in this grave matter may realize the highly unsatisfactory conditions now obtaining in the medical department of the army in relation to the prevention of the widespread infection of our troops by venereal poisons. It is at least possible that some influential persons thus interested and informed may take some steps which will lead to this chaos being reduced to order. I have already tried and failed to persuade those who could take such steps, to make some definite and practical move in the matter. Such advance as is now being achieved is made more or less *sub rosa*. To be really effective against the existing danger, it must be made by outspoken, clear, and authoritative order. I have been personally informed by very many army medical officers of superior rank that, in spite of being thoroughly convinced of the absolute necessity of prophylactic medical measures, they are held back from performing what they feel should be regarded as their medical duty, by the existence of an army order which literally forbids such action.

Surely, if the highest army medical authorities may be restrained from action through either want of encouragement or positive hindrance from the political executive, it is the business of the people and Parliament to force the government to remove this scandal or to justify their attitude towards it.

I am, Sir, your obedient servant,

H. BRYAN DONKIN, M.D., F.R.C.P.  
London."

#### BOSTON AND MASSACHUSETTS.

**ESSEX SOUTH MEDICAL SOCIETY.**—The third regular meeting of the Essex South Medical Society was held Wednesday evening, February 6, at the Lynn City Club. Papers were read by Dr. A. R. Kimpton of Boston, and Dr. M. A. Harrington of Danvers State Hospital Staff. Dr. Kimpton's talk was based on the conclusions reached as to the value of transfusion from a series of three hundred cases, while Dr. Harrington, who was formerly a regimental surgeon in the British army, talked on his experiences in the Service.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending January 26, the number of deaths reported was 282, against 272 last year, with a rate of 18.74, against 18.19 last year. There were 56 deaths under one year of age, against 34 last year.

The number of cases of principal reportable diseases were: diphtheria, 115; scarlet fever, 37; measles, 93; whooping cough, 80; tuberculosis, 82.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 9; tuberculosis, 10.

Total deaths from these diseases were: diphtheria, 6; scarlet fever, 5; measles, 3; whooping cough, 5; tuberculosis, 29.

Included in the above were the following non-residents: diphtheria, 2; tuberculosis, 2.

**RARE DISEASES IN MASSACHUSETTS.**—Following is a record of the occurrence of certain rare diseases throughout the Commonwealth during the month of November.

*Actinomyco*sis was reported from Danvers 1, and Westwood 1.

*Anterior poliomyelitis* was reported from Boston 1, Cheshire 1, Lowell 2, Ludlow 1, Lynn 2, Needham 1, Somerset 1 and Springfield 1.

*Anthrax* was reported from Boston 1 and Woburn 3.

*Dog bite* was reported from Boston 2, Brockton 1 and Holyoke 1.

*Dysentery* was reported from Barnstable 3.

*Epidemic cerebrospinal meningitis* was reported from Arlington 1, Boston 5, Brookline 1, Fall River 3, Lowell 1, Northampton 1, Salem 1, Springfield 1, Wilbraham 1 and Worcester 1.

*Malaria* was reported from Brockton 1 and Sutton 1.

*Pellagra* was reported from Northampton 1.

*Septic sore throat* was reported from Boston 1, Brookline 1, Chicopee 1, Haverhill 1, Lowell 1, Medford 1, Melrose 1 and Newburyport 1.

*Smallpox* was reported from Boston 1.

*Tetanus* was reported from Gardner 1, New Bedford 1, Sterling 1, Westfield 1 and Worcester 1.

*Trachoma* was reported from Boston 7, Chelsea 1 and Wakefield 1.

**INFANTS' HOSPITAL FUND.**—The treasurer of the \$25,000 fund being raised for the benefit of the Infants' Hospital announces that \$8876 have already been received.

**THE BOSTON CITY HOSPITAL.**—The forty-third Annual Report of the Trustees of the Boston City Hospital has been published and covers the period of time from Feb. 1, 1916, to Jan. 31, 1917. The entire expenditure for all departments of the hospital for the maintenance during the fiscal year was \$798,553.87. Of this amount \$355,873.94 was spent in personal service. There was collected for the care and treatment of patients of all classes the sum of \$150,825.10. During the year the facilities of the x-ray department were greatly improved by the subdivision of the rooms by means of lead-protected partitions and by the rearrangement of the apparatus, thus securing more working space and greater efficiency from the equipment. A special room has been provided for cystoscopic examinations. The total number of patients receiving bacterial vaccines was 352; number of visits to the clinic 2562; number of vaccine inoculations, 2348. The total number of patients under anti-syphilitic treatment was 526. Number of cases of syphilis of the central nervous system treated by intradural injection of salvarsanized serum or under observation, 146. The number of patients treated in the out-patient department was 35,867. The work of the pathological laboratory has been enriched by the opportunity of study of poliomyelitis which the epidemic of that year afforded. There was available post-mortem material from over thirty cases. Under Dr. Mallory the study of scarlet fever has been continued and the results published.

**HOSPITAL BEQUEST.**—By the will of the late Ellen F. Kennedy of Worcester, Mass., the Worcester Society for District Nursing receives a gift of \$5000. The Worcester Memorial Hospital is to share in the distribution of a trust fund.

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## Miscellany.

### A PLAN FOR THE CONSCRIPTION OF PHYSICIANS.

DR. D. S. GARDNER of Ohio has set forth in the January issue of the *Ohio State Medical Journal*, a plan for the conscription of the medical resources of the nation, which is sufficiently detailed and comprehensive to be worth reprinting. He states that:

"I do not urge conscription as a means of supplying the military service with sufficient medical men to care for its needs, but as a just and equitable method of securing a proper distribution of this service between the war-time needs of the present and future and the civilian requirements and educational demands of the future. It is not for a moment contended but that the military necessities have priority—if necessary to the last medical man of the country—but it is hoped that the subject can be systematized so that all the interests may have just representation.

Selective conscription will accomplish this.

Available information is not of a character upon which accurate statistics can be based, but for the purpose of a general analysis we may accept the declaration that the war requirements of medical men are one per 100 men, and that there is immediate need for the Medical Corps of the Army of 24,000 physicians and 120,000 enlisted men. It is further held that there are in the United States 90,000 of military age, 22 to 55 years. It is not at all held that 24,000 will be sufficient. In fact, other sources of information indicate that fully 40,000 will be required if the war be of two years' duration, or if the army should expand to two million men. Editorially, *The Journal of the American Medical Association* has recently said: 'There are in the United States approximately 145,000 physicians, consequently less than one in seven is needed for full preparedness. Is it possible that there shall finally be difficulty in obtaining voluntarily the medical men needed? We cannot believe so. It is inconceivable that conscription of physicians will ever be necessary. But if we are to get the 20,000 on the volunteer system there must be more eagerness for service on the part of the profession than has thus far been shown.'

This, at the moment, seems to about represent the situation.

Now what seem to be the facts? Conceding that there are 145,000 physicians in the United States, this census means the total of all ranks, ages and other conditions. It by no means represents what we are led to believe, that all are able-bodied, or capable of rendering some degree of service. The facts are that the age of physicians is greater than that of any other profession. There are no men in its ranks of 22 years, and it is a safe prediction that the average age is above 40 years.

Admitting that there is no difficulty now in securing sufficient medical men for the service or that there will be none in the future, it should also be conceded that the physical and professional exactions imposed upon applicants for medical service are such as to take out of the profession the practically perfect men only. May not this, then, exhaust the supply of effective men? It is this condition that warrants the plea that a halt should be called upon voluntary enlistments of the medical profession, in order that the greatest good may be accomplished for the military arm of the nation, for the civilian population and the educational needs of the moment.

It has been said that the average age of the medical profession is greater than that of any other profession. Again, upon no other class of men are duties more exacting. In none, probably, is the average of health lower. During the period of this war we cannot hope to replace medical men at a greater rate than 4000 per year, which is barely enough to take care of the civilian population. This rate cannot be main-

tained under present teaching and conscription conditions.

It is contended that no legislation could be enacted that would make selective conscription of the profession possible. Now we are discussing this only as it affects the volunteer physician in his relation to the present volunteer army and in no wise applies to the regular army.

There was vested in the President, by the terms of an Act of Congress dated May 18, 1917, authority to increase, temporarily, the military establishment of the United States. A study of this Act would, I believe, convince us that it would be possible to readily amend it by Congress, so as to provide the necessary legislation for the selective conscription of the medical profession. This act could provide as follows:

1. *Registration*—That each person entitled to practise medicine under the laws of the several states, territories and the District of Columbia, shall, upon a certain date, register at some point within the jurisdiction provided for the purpose. The data provided in the physician's registration card should, among other matter, contain the following: Name, age, academic degrees, college of graduation, with date; location, with years of practice at each point; admitted state of his health; detailed financial condition, as per a definite schedule; dependence, number of children; nature of practice, if of special character; years of training, with post-graduate teaching; hospital connections; experience, if any, in a military capacity, or in the handling of men.

2. *Administration*—(A) The President would be authorized to create and establish a General Medical Board, for the purpose of administering the act providing for the selective conscription of the medical profession. This board could be composed of the Surgeon-General of the Army, the Surgeon-General of the Navy, the Surgeon-General of the Public Health Service, the President and President-elect of the American Medical Association, the President of The American College of Surgeons, and the President of the American Public Health Association. Those not already provided for should be given suitable rank and pay.

(B) Upon recommendation from the governor, the President could appoint for each state and territory a State Board, which would have general jurisdiction in the administration of the selective conscription of physicians. These boards could be composed of the Surgeon-General of the State, the President of the State Medical Association, with an additional member or more recommended to the governor through the organized medical interests of the state. They would also have suitable rank and pay.

(C) In like manner there could be appointed for each councilor district of the states and territories a board of three resident members of the councilor district, which board would be the initial unit having in charge the operation of the service in like manner with the local boards of

the general conscription service. This board could be appointed through the representations of medical interests and have proportionate rank and pay with the other boards.

3. *General Duties*—Rules and regulations, not inconsistent with the Act creating the boards, could be made for the conduct of their business. The General Medical Board would receive from the Army, Navy, and Public Health Departments the assignment of quotas and the allotment of credits, and pro-rate them among the several states and territories. It would have general jurisdiction and be the final source of appeal in all matters relating to the administration of the Act. State boards would receive from the General Medical Board their quota requirements, pro-rate them among the councilor districts, act as an appeal board, and do such things as would expedite the handling of the work within their jurisdiction. The Councilor District Medical Board should have original jurisdiction in its territory of all physicians who registered, or who should thereafter register. Councilor boards would provide the means of and have entire charge of the matter of registering physicians in their district, and have exclusive jurisdiction in their respective areas over all questions to be heard and determined therein under the terms of the Act of Congress and the rules and regulations provided by the President.

#### GENERAL PROVISIONS.

The general provisions and operations of the Act would be about as follows:—It would begin with the registration of the physicians of each councilor district, which registration would be under the immediate direction and supervision of the councilor district board. Suitable penalties would be provided for a failure to register. The registration cards would remain permanently in charge of the district. This, when complete, would constitute the roster of the profession for military purposes. Speedily thereafter each physician registered would be submitted to a physical examination. The results of these examinations when tabulated would be to place him in one of four groups as follows:

1. Approximating 100% physical efficiency.
2. Approximating 75% physical efficiency.
3. Approximating 50% physical efficiency.
4. Approximating 25% physical efficiency.

The second effort would be to ascertain, as nearly as possible, the physician's professional qualifications and the nature of his special training, his social and business status, together with the degree of his dependence, and finally his relation to the needs of the community.

With this information at hand it would be possible to assign each member of the profession to one of four classes: A, B, C and D, for service as follows:

1. Active service with the forces at home or abroad. Classes A and B.
2. Active or passive military service in this country. Classes B and C.

3. Active service at home in the care of the civilian population and the educational needs of the medical universities. Classes A, B and C.

4. Passive service of medical men at home. Class D.

It has been made clear that every effort would be brought about to classify the physician: First, as to his physical fitness; second, as to his general and special professional qualifications; and, third, his degree of dependence and the need, if any, of the civilian population in the territory of his practice. If so, it should be easy to see that his services could be intelligently applied as follows:

The General Medical Board would receive from the War Department, as occasions require, the quotas of the medical needs of the volunteer service which could be divided into the following groups:

- A. For general medical service.
- B. For general surgical service.
- C. For special forms of service:
  - Orthopedic
  - Nervous diseases and psychiatry
  - Eye, ear, nose and throat
  - Laboratory
  - Pathology
  - Sanitation
- D. For hospital construction and equipment.
- E. For base or other hospital superintendence.
- F. For teaching in Army and Navy schools, hospitals and cantonments.

The general quotas would be pro-rated to the various state and territorial boards, and in turn by them to the councilor district boards in such numbers and division of service as would secure the filling of the quotas with expedition.

To further extend the detail of this analysis the Act could provide that all matters relating to medical service in the volunteer army should be in the hands of and pass through the General Medical Board having in charge selective medical conscription.

There should be a readjustment of the present Medical Officers' Reserve Corps. Enlistments and withdrawals should be made therefrom so that adequate provision could be had for:

1. The reorganization of the teaching requirements of medical colleges.
2. Reasonable precautions taken to safeguard in some degree the necessary needs of the civilian population.

Attention again is directed to the fact that there are about 100 medical universities in the United States, graduating annually 4000 students, none of which can open its doors with more than a fraction of its teaching force.

If the military demands are to be such as to cause a severe drain upon the number of medical men taken, early provision should be made for the care of the civilian population. To do this it is submitted that the following rules must obtain:

Establish in towns of sufficient size, public dispensaries in charge of Class C and D physicians.

There is no effort made to burden the present outline with statistical data in support of the contention that selective conscription of our profession is necessary to conserve its resources, but the following may be looked upon as quite accurately representing gross totals: There are in the United States approximately 140,000 physicians. The population is 110,000,000. The average age of the profession is above 40 years. The approximate number of active men are 100,000.

Approximate for Class A .....	40,000
Approximate for Class B .....	20,000
Approximate for Class C .....	20,000
Approximate for Class D .....	20,000

100,000

Approximate number required for military service, 50,000.

These would be divided as follows:

Class A .....	30,000
Classes B, C, and D .....	20,000

50,000

For the needs of the civilian population, 50,000 divided about equally among the classes A, B, C, D, or one physician to approximately 2500 of population.

These thoughts are submitted for your earnest consideration. The hope is expressed that your conclusions will not be hastily drawn. If the subject is not vital to the interests, first, of our country, then to our people, and finally to ourselves, it is of no value. If, upon the other hand, you feel as I do, then the matter should become one of common effort, to the end that we may secure a proper distribution of this great asset."

#### ENGLISH PIONEERS IN NAVAL MEDICINE.

To *The British Medical Journal* of December 29, 1917, we are indebted for an account of pioneers in the medical care of sailors of the navy.

"A seafaring nation like the British was naturally confronted early in its naval development with the problems of disease as they affect men who go down to the sea in ships. The subject did not escape the far-seeing mind of Richard Hakluyt, or Hacklewit as his name was generally pronounced and often spelt by his contemporaries. He was not a medical man, but a clergyman; though he modestly called himself simply a 'preacher' he was Archdeacon of Westminster and Chaplain of the Savoy. The tercentenary of his death fell on November 23rd of last year. From his boyhood he had been fascinated by the

'sweet studie of the historie of cosmographie,' and he had a prophetic vision of the important part to be played by tropical disease in colonial expansion, or 'plantation' as it was called in his day. In his dedication to Sir Robert Cecil of the third and last volume of the *Voyages, Navigations, Traffiques and Discoveries of the English Nation*, published in 1600, he refers to an essay on naval hygiene which is probably the earliest English work on the subject. This is a treatise by George Whetstone, which was not long ago unearthed and reproduced in facsimile by Dr. Charles Singer. Notices of the little work appeared in the *British Medical Journal* of November 23rd, 1912 (p. 1481), and November 13th, 1915 (p. 730). Hakluyt says: 'I was once minded to have added to the end of these my labours a short treatise, which I have lying by me in writing, touching *The Curing of hot diseases incident to travellers in long and South-erne voyages*, which treatise was written in English, no doubt of a very honest mind, by one M. George Wateson and dedicated unto her sacred Maiestie. But being carefull to do nothing herein rashly, I showed it to my worshipfull friend M. doctor Gilbert, a gentleman no less excellent in the chiefest secrets of the Mathematicks (as that rare jewel lately set foorth by him in *Latine* doth evidently declare) than in his own profession of physicke: who assured me that it was very defective and imperfect, and that if hee might have leisure, which that argument would require, he would either write something thereof more advisedly himselfe, or would conferre with the whole Colledge of Physicians, and set downe some order by common consent for the preservation of her Maiesties subiects.' Whetstone was a gallant and a poet who had seen much of foreign parts, and in his travels had picked up some notions of naval medicine. But he was not a doctor; it is no wonder, therefore, that his work was defective and imperfect. William Gilbert, on the other hand, was the foremost scientific man of his time, and the advance of knowledge was greatly delayed by the fact that his scheme never reached fulfilment. Nearly a century had to elapse before there appeared a work entitled *An Account of the . . . Distempers that are incident to seafaring people With observations on the diet of Seamen in His Majesty's Navy*, by the 'Physician to the Blue Squadron of His Majesty's Fleet' (London. 1696). Gilbert seems to have been in high repute for his knowledge of the diseases of seamen. In a recent paper giving an account of his life and work Dr. Singer quotes the following entry from the Acts of the Privy Council under date March 22nd, 1588, when the navy must have been anticipating the arrival of the Armada which appeared off our coasts a few months later: 'Whereas a dyesease and sickness began to encrease in her Maiesties Navve, for remedie of the dyeseased and for staie of further contagion their Lordships thought meet that some lerned and skillful phisicians should pres-



ently be sent thither; and for that their Lordships hard that good reporte of the sufficiency learning and care of Dr. Gilbert, Dr. Marbeck, Dr. Browne, and Dr. Wilkinson, as they were though very fytt persons to be employed in the said Navye to have care of the helthe of the noblemen, gentlemen, and others in that service,' therefore these physicians were required 'to put themselves presently in a readynes to goe downe to the Navye, and to carry with them a convenyent quantytie of soche drogues as should be fyt for medycine and cure; and uppon their repaier and conference with the Lord Admyrall soche order should be taken for their entertainenment as should be to their contentement.' It would be interesting to know if this scientific mission was ever accomplished, and, if it was, what came of its work.

If Gilbert must share with others the glory of creating naval medicine, he stands alone in fields of scientific exploration which have been of incalculable advantage to mankind. He was referred to by Sir Thomas Barlow in his Harveian Oration last year as a pioneer in the study of magnetism, but he is more adequately described in the *Encyclopaedia Britannica* as the father of electric and magnetic science. His book, *De Magnete*, is the record of eighteen years of patient experimental work, and contains a great number of important observations on the properties of the magnet. He framed a theory to explain magnetic deviation, investigated the dip of the compass needle, and propounded a method of determining latitude by its means. He was the inventor of two instruments designed to enable seamen 'to find out the latitude without seeing sun, moon, or stars.' He founded the science of electricity, and placed it on a solid basis of experimental fact. He also did much work in chemistry, but the records of his experiments have, unfortunately, been lost. He had a hand in the preparation of the first British pharmacopoeia, although the work did not see the light until after his death. This was a misfortune, for he hated everything savoring of quackery, and it can hardly be doubted that his influence would have prevented the inclusion of much fantastic and foolish stuff which found its way into the work. Summing up Gilbert's scientific achievement in addition to his pioneer work in electricity and magnetism, Silvanus Thompson says: 'He also made notable contributions to astronomy, being the earliest English expounder of Copernicus. In an age given over to metaphysical obscurities and dogmatic sophistry, he cultivated the method of experiment and of reasoning from observation, with an insight and success which entitles him to be regarded as the father of the inductive method. That method, so often accredited to Bacon, Gilbert was practising years before him.'

This remarkable man came of a family which was probably connected with Sir Humphrey Gilbert, the famous explorer, and half-brother of Sir Walter Raleigh. He was born at Colchester

in 1544, and educated at St. John's College, Cambridge, of which he became a Fellow and mathematical examiner. He took the degree of M.D. in 1569. He then spent some years in travel abroad, visiting Italy, where he made the acquaintance of Giordano Bruno, the martyr of free thought, Sarpi, and probably Galileo. On his return to England he settled in London, where he practised his profession with great success. He lived on St. Peter's Hill, between Upper Thames Street and Little Knightrider Street, where he used to gather together a society or college of men interested in the study of nature. This, Dr. Singer says, may be regarded as the earliest scientific association in England, and perhaps in Europe. Gilbert was successively censor, treasurer, and president of the Royal College of Physicians. In 1601 he was appointed physician to Queen Elizabeth, who trusted him as a doctor, and appreciated his work as a scientific investigator. How genuine was her appreciation is proved by the fact that, although by no means liberal in the matter of money, she gave him a pension to help him in the prosecution of his researches. Gilbert attended Elizabeth on her deathbed in 1603 and was appointed physician to her successor. He lived only a few months afterwards, dying, probably of the plague, towards the end of 1603.

The medical profession may well be proud of this great scientific pioneer."

#### OCCUPATIONAL DISEASES.

THE Department of Health of New York City is taking steps to control more efficiently the incidence of certain preventable occupational diseases. The following notice is published in its health bulletin:

In its work for the reduction and control of the so-called industrial diseases, the Department of Health makes extensive use of the information gathered as the result of medical and sanitary surveys in particular industries and of the results of the medical examination of the workers at the occupational clinics. While this has already yielded excellent results, especially in certain trades, the Department feels that private physicians could be of much greater service in this work than they have been in the past. If physicians would report, as they are required to do, instances of occupational diseases coming to their notice, the Department would undoubtedly be able to pick up many additional clues in industrial hazards than are now suspected.

During the year 1917, a total of 139 cases were reported to the Department of Health by private physicians and hospitals. As can be seen from the following table these related principally to caisson disease, lead poisoning and anthrax. It is improbable that this number represents all the instances of industrial diseases in a city of over 5,000,000 people.

Will not the practising physician hereafter notify the Department of Health of every case of suspected industrial disease which comes to his notice? The information is desired not only for the correction of unhygienic and insanitary conditions existing in some particular shop or factory, but also to gain a complete knowledge concerning the hazards to which industrial workers are exposed in this city. The patients are visited only with the consent of the attending physician, and all information obtained is kept strictly confidential.

While certain diseases, such as anthrax, caisson disease, and lead poisoning almost always prompt the physician to make inquiries regarding the patient's occupation, the fact is usually lost sight of that many common diseases are often directly traceable to the patient's occupation. Among these the following may be mentioned: Tuberculosis, pneumonia, asthma, bronchitis, circulatory diseases, arteriosclerosis, apoplexy, endocarditis, myocarditis, nephritis, diseases of the skin, diseases of the nervous system, orthopedic defects.

Whenever occupation is a factor in any of these diseases, the case should be reported to the Department of Health. It is especially important to report (as required by law) all cases of arsenic, mercury, phosphorus, bronze, wood alcohol, anilin, brass, acids, gases (carbon monoxide, illuminating, natural gas, and others), bisulphide of carbon, wood naphtha.

## THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

### III.

BY EUGENE R. KELLEY, M.D.,

*Director, Division of Communicable Diseases.*

(Continued from page 173.)

#### REPRESSIVE MEASURES.

UNDER the term, "Repressive Measures," may be conveniently grouped a number of anti-venerel measures which involve the joint utilization of police power and social agencies.

The most significant feature of modern programs for the control of venereal diseases is their frank recognition of the importance of sane repression, along with measures of education, diagnosis and treatment.

In this field the medical man and the public health official must seek the advice, coöperation, and active help of the judiciary, the police, the penologist, the social worker, and all agencies working towards physical and moral rehabilitation of the ignorant and unfortunate.

For convenience of reference, the principal repressive measures contemplated in the Massachusetts Venereal Disease Program may be listed under these heads:

1. Suppression of prostitution.
2. Venereal control in penal population.
3. The venereal quack problem.
4. Indirect control through the license power of the State.

1. *Suppression of Prostitution.* All workers in the venereal field soon come to recognize the relationship between prostitution and the spread of venereal diseases. Prostitution constantly replenishes the great reservoir of venereal infection, or, in the vivid phrase of Major W. F. Snow, prostitution is to venereal disease what the anopheles breeding swamp is to malaria.

Modern expert testimony, both medical and police, is a unit in condemning all systems of segregation of prostitutes, with or without "certificates of health" in connection therewith.

The futility of all systems of segregation can be best seen by noting that in those cities of Europe where it has been most thoroughly carried out, the officials charged with its enforcement frankly admit that only one-fifth to one-tenth of the prostitute class are ever enrolled. The remainder continue to ply their profession vigorously as clandestine prostitutes.

No practical medical or social worker has any illusions as to the immediate or remote prospects of eliminating prostitution. But experience has shown that many measures can be carried out in reference to prostitution by joint action of the courts, health authorities, and institutional authorities which will materially lessen venereal infection and mitigate the evils of prostitution generally.

These measures may be summarized as:

- (a) Breaking up the alliance between prostitution and alcohol;
- (b) Repression of street solicitation;
- (c) Suspended sentence-probation procedures by joint action of judiciary and health authorities;
- (d) "Follow-up" work by health officials to reach the clandestine prostitute, not amenable to control through the courts, and exercising control over her through quarantine or its alternative—supervised treatment—in an institution if necessary;
- (e) Imposing of reformatory sentences in appropriate cases;
- (f) Recognition of the mentally deficient prostitute, and providing proper treatment for her by commitment to an institution for the feeble-minded.
- (g) Analogous procedures for the confirmed alcoholic or "narcotic" prostitute;
- (h) Social rehabilitation of the clandestine or immature prostitute by educative methods, moral persuasion, providing material aid through period of treatment, and finding permanent employment for her.

To carry out successfully any such program, there must be close "team-work" among many public and private agencies. The most charac-

teristic feature of this new program against prostitution is the emphasis placed upon prostitution as an epidemiological rather than as a penal problem, and the logical deduction therefrom of seeking to apprehend and treat the individual prostitute primarily as a disease-carrier, instead of officially ignoring her existence. In the Massachusetts program the skilled "follow-up" worker employed by each approved venereal clinic is chiefly depended upon to get in touch with the prostitute patient, unravel her history and epidemiological record, and bring such corrective agencies and methods to bear upon her case as may seem most advisable in the individual instance.

2. *Venereal Control in Penal Population.* The inmates of penal institutions are notoriously subject to venereal infections. Routine Wassermann examinations show very high percentages of positive reactions among the inmates of the State penal institutions. In the county jails and houses of correction, there are constantly numerous short-term prisoners infected with either gonorrhea or syphilis, who serve their brief terms and return to their former homes or haunts as dangerous spreaders of infection as before. A very far-sighted statutory provision exists (Chapter 75, Revised Laws, Section 48), under which a prisoner infected with syphilis may be restrained beyond his term of commitment for the purpose of treatment.

The problem has been to find all the infective prisoners. Legislation designed to accomplish this result has been introduced jointly by the State Department of Health and the State Bureau of Prisons, requiring thorough physical examinations of all inmates of penal institutions committed for thirty days or more.

3. *The Venereal Quack Problem.* No phase of the entire venereal problem calls for a more thorough-going program of repression than that of the venereal quack. It is difficult to use the language of restraint in referring to these pariahs of medicine. But hitherto the State has provided nothing in their place. Unscrupulous as they all are, inadequately trained as most of them are, they have supplied a widespread demand among the venereally infected for some easily located place of treatment, open at hours that fitted in with the patient's spare time. Their treatment has been, for the most part, crude and unscientific, even when it has not been downright fraudulent; but by their unscrupulous utilization of all the devices that the art of modern advertising can conceive, to hundreds of thousands of their defrauded victims they are made to appear as the veritable lineal descendants of Aesculapius himself.

With the establishment of free or low-pay clinics throughout the State, where the highest quality of scientific treatment for venereal diseases is made accessible to everyone, there will vanish the last excuse for the existence of the advertising venereal quack. Fortunately, there

already exist ample statutory grounds for suppressing the quack. All that is needed is vigorous action by health authorities and district attorneys to make this unsavory specialty only a disagreeable memory in the history of Massachusetts medicine.

One state, Oregon, has shown the way and completely eliminated the venereal quack from its borders, and what Oregon can do surely Massachusetts can do also.

4. *Indirect Control through the License Power of the State.* In the license power of the State we possess a powerful weapon in the fight against venereal diseases, if only that power can be fully utilized. Among such licensure methods may be included:

- (a) Control through medical license power.
- (b) Control through druggist license power.
- (c) Control through liquor license power.
- (d) Control through marriage license power.

An amendment to the medical licensing law, passed by the 1917 General Court, places in the hands of the Medical Registration Board of the Commonwealth the power to revoke medical licenses for fraudulent conduct. Through this wise provision, much assistance in the fight against the unscrupulous licensed practitioner, fraudulently specializing in venereal diseases, is expected.

The recent prompt action of the liquor licensing boards of some of our large cities, following reports of conditions by Federal War Department investigators, has been a most happy illustration of what can be accomplished through the license power vested in these boards in reducing the opportunities for venereal infection.

Several states have sought to lessen venereal disease transmission through the enactment of laws aimed at preventing the marriage of the venereal carrier.

One of the most serious of venereal disease problems is the widespread custom of drug-store prescribing, and of actual treatment of venereal diseases, especially gonorrhea, by drug clerks. In the words of Dr. Franklin Martin, Chief of the Medical Section of the Council of National Defense, "treatment of these cases by drug clerks is nothing short of criminal in view of what we now know of the effects of gonorrhea and syphilis. Drug-store treatment is synonymous with no treatment." Because it believes that drug-store prescribing for venereal diseases is a most serious evil, and because it firmly believes that the ethical druggist will welcome any effective measure to mitigate this evil, in spite of the incidental inconvenience such a measure must bring him, the State Department of Health has introduced a bill prohibiting the sale of venereal remedies, except upon a physician's prescription. This proposed law follows very closely the mechanism of the anti-narcotic law already on the statute books.

## Correspondence.

## VESALIUS AND LOUVAIN.

Boston, January 18, 1918.

Mr. Editor:—

In a report of the librarian of the University of Louvain, referring to the destruction of the University buildings and the library by the Germans, there occurs a statement which may throw an interesting side light on the life of Andreas Vesalius. The passage is as follows:

"Our collection of incunabula was among the most important and most valuable. We had from 800 to 1000 specimens . . . . . We kept, in large cupboards, a fine collection of Flemish bindings of the 16th and 17th centuries, of every sort. We guarded the whole with a jealous care for all the precious memorials of the ancient University. Who has not admired the finely-preserved original of the charter founding our University in 1425? Who has not heard speak of the copy on vellum of the famous work of André Vésale, *de humani corporis fabrica*, a copy of which Charles V. presented to our University? The burning of the University buildings has completely destroyed the treasures kept in the library of the University of Louvain. In their night of drunken and murderous orgy the German soldiers spared nothing. Those who have this crime against learning and civilization on their conscience will have to bear, in the judgment of history, a heavy and lasting responsibility.

"P. DELANNOY,

*"Librarian of the University of Louvain."*

In the latter part of 1536, Vesalius returned to Louvain from Paris and there conducted public anatomical demonstrations and lectures and at the same time he began to experiment with China root, a new remedy for pleurisy. The father of Vesalius was apothecary to Charles V. and, in 1538, he presented the anatomist's first plates to the Emperor. In the same year Vesalius published these plates (*"Tabulae Anatomicae"*) and in 1543 the *"Epitome"* of his great anatomical work appeared at Basel as a sort of introduction to and summary of the *"Fabrica"* of the same year. This work, dedicated to Philip, the son of Charles V., is extremely rare.

According to Ball (Andreas Vesalius, the Reformer of Anatomy), two beautiful copies of the *"Epitome,"* printed on vellum, are in existence. One is in the British Museum and is thought to be the copy which was owned by the celebrated Dr. Richard Mead; the other one is in the possession of the University of Louvain. It was evidently this second copy of the *"Epitome"* on vellum, which was destroyed when the library of the University of Louvain was burned. In fact, the words *"de humani corporis fabrica"* appear in the rather long title of the *"Epitome,"* this being in harmony with the report of the Librarian of the University of Louvain and with Ball's statement. This vellum copy of the *"Epitome"* must, therefore, have been in the library at Louvain at least 371 years. Dr. Richard Mead (1673-1754) whose vellum copy of the *"Epitome"* is in the British Museum, was a scholarly man and could well afford to purchase so expensive a work, since he was the most prosperous practitioner of his time, making as much as £7000 in one year, an enormous amount in those days when the purchasing power of money was seven or eight times what it is now.

In 1544, a year after the publication of the *"Fabrica,"* Vesalius was appointed Court Physician to Charles V. (who was a great admirer of his skill as a surgeon) partly because he had cured Charles of what was thought to be a fatal disease and partly because of the success of an operation (probably a

decompression for a fractured skull) on the head of the grandson of the Emperor. Is it any wonder then, that as a measure of gratitude and admiration, Charles V. should have presented to the native country of the Belgian anatomist the fine copy of the *"Epitome"* which was carefully preserved until the University of Louvain was destroyed during the early months of the World War? At the fourth centenary of the founder of modern anatomy (December 31, 1914) his native University was already a mass of ruins and with it there was destroyed that rare parchment presented by a royal admirer.

ISADOR H. CORIAT, M.D.

## OBSTETRICS AND THE MEDICAL PROFESSION.

Mr. Editor:

I beg a few words comment on the unique appeal of Mrs. Lowell in the *Boston American* of January 11, relative to the new maternity clinic at the Brigham Hospital.

As many of your readers may not have seen the article, I will relate Mrs. Lowell's plans for the uplifting of the people who hitherto have been depending on common doctors for obstetric care:

For the fee of \$25.00, Mrs. Lowell and the Peter Bent Brigham Hospital will furnish first-class medical care at the patient's home, including nurses, social workers, etc.

Mrs. Lowell goes on to say that the poor have the best obstetric care (shades of our student days!) being attended by hospital doctors, that the rich can have the best of care if they know enough to hire it, but that the common people are in a bad way.

This line of argument is quite familiar to the profession, originating with a prominent doctor some two years ago. Since that time we have had frequent reiterations of the statements by male and female followers of this doctor.

It would be interesting to the profession to know if the Brigham Hospital is a party to this covert vilifying of physicians, also it would be interesting to know if the purpose of the Hospital is to compete with physicians in the neighborhood.

My understanding of the purpose of the founder of the Brigham Hospital is that it was to be a hospital for the sick poor of Suffolk County.

We all know how far it is from what its founder intended it to be.

Under our present economic conditions there is a real field for help among the unfortunate poor of our city in regard to obstetric care. We all know that up to the time the maternity ward was opened at the Boston City Hospital, that it was impossible to get a free maternity case into our Lying-in hospitals, yet these same hospitals give the public the impression that they are free.

It would be a wise and profitable undertaking for the state to furnish experienced physicians to attend labor cases in families which cannot afford a doctor.

As conditions are now, these cases are attended in most part by students and midwives, notwithstanding Mrs. Lowell's unwarranted assertions, and the lot of these parturient women is not an enviable one.

Very truly yours,

CHARLES MALONE, M.D.

5 Glen Road, Jamaica Plain, Mass.

## SOCIETY NOTICE.

THE HARVEY SOCIETY.—The sixth lecture of the series will be held at the New York Academy of Medicine, 17 West Forty-Third Street, on Saturday evening, February 9th, 1918, at 8.30 P.M., by Dr. J. Gordon Wilson, Professor of Otology, Northwestern University, Chicago. Subject: "The Effect of High Explosives on the Ear."

DR. F. H. PIKE, Secretary.

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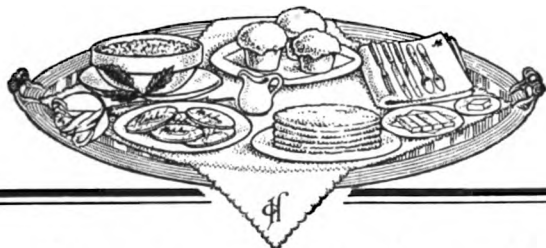
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Session 1918-1919. Candidates are required to present evidence of the completion of two years of collegiate work toward a Bachelor's Degree in a college recognized by the New York State Department of Education. This two years of college work must include at least one year of college work in Chemistry, Physics, Biology, English and either French or German.

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Session 1917-1918 begins Wednesday, September 26, 1917

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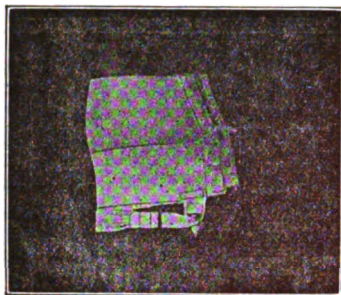
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No. 7

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## CONTENTS

### ORIGINAL ARTICLES

SUGGESTIONS ON THE CARE OF MENTAL CASES.

*By Frederick H. Packard, M.D., Waverley, Mass.*

RELATION OF INDUSTRIAL SURGEON TO INDUSTRY AND TO SOCIETY.

*By John F. Curran, M.D., Worcester, Mass.*

ORGANIZED PROVISION FOR THE CARE OF THE SICK IN MASSACHUSETTS.

*By G. E. Whitehill, M.D., Everett, Mass.*

GASTRO-DUODENAL PERFORATION: A NEW DIAGNOSTIC SIGN.

*By Martin T. Field, M.D., Salem, Mass.*

DIFFERENTIATION OF STREPTOCOCCI. *By D. M. Lewis, M.D., New Haven, Conn.*

### CLINICAL DEPARTMENT

SEVERANCE OF THE CHORDA TYMPANI NERVE. *By Irving Sobotky, M.D., Boston.*

### EDITORIALS

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### **PATHOLOGY, PHYSIOLOGY AND PHARMACOLOGY.**

#### **A COMPARATIVE STUDY OF THE REACTIONS TO HUMAN AND BOVINE TUBERCULIN APPLIED BY THE METHOD OF VON PIRQUET.**

GOUVAIN (*The Lancet*, Oct. 6, 1917) reports an investigation of the cutaneous tuberculin reaction to determine the following points:

1. Whether the reaction to cutaneous inoculations of tuberculin was constantly present in patients suffering from undoubted tuberculous lesions of the bones or joints—that is, in patients from whose lesions the tubercle bacilli had been isolated.

2. If not constantly present, under what circumstances the reaction would not appear.

3. Whether by using both human and bovine tuberculin for the von Pirquet test it would be possible to ascertain, from the reaction which followed, whether the patient was suffering from tuberculosis of human or bovine origin.

4. Whether the degree of reaction gave any indication of the severity of infection.

The results of his conclusions are as follows:

1. Local reactions to inoculations of both human and bovine tuberculin were invariably present in all patients from whose pus tubercle bacilli had been isolated.

2. Though reactions were invariably present the degree of reaction varied within wide limits.

3. Weakly and cachectic patients usually reacted feebly, quite irrespective of differences in the severity of their local lesions.

4. Strong and vigorous patients exhibited wide differences in the degree of their reactions, irrespective of differences in the extent of the severity of their local lesions.

5. The quantitative von Pirquet test was not found to be of value in forming an estimate of the severity of the infection, and was of little prognostic value.

6. It was impossible to differentiate the type of tubercle bacillus with which the patient was attacked by the nature of the reaction to the tuberculin employed.

[J. B. H.]

#### **A STUDY OF THE INCIDENCE OF THE TYPES OF PNEUMOCOCCI ISOLATED FROM ACUTE LOBAR PNEUMONIA AND OTHER INFECTIONS, AND AN ANALYSIS OF THE CASES CLASSIFIED BY TYPES IN REGARD TO MORTALITY COMPLICATIONS, ASSOCIATED DISEASES, BACTEREMIA, AND LEUCOCYTOSIS.**

CLOUGH (*Bulletin of the Johns Hopkins Hospital*, Oct., 1917), discussing the types of pneumococci in relation to certain features of the disease, summarizes her work as follows:

In this study the grouping of 121 strains of pneumococci from different diseases was determined, and the percentage incidence of the different groups in the various conditions calculated. The lobar pneumonias in adults were analyzed in detail in regard to the

(Continued on page vi.)



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(Continued from page 10.)

mortality, age, presence or absence of associated diseases, complications, bacteremia, and leucocytosis. No definite conclusions can be drawn from so small a series, but certain points were brought out which would be significant if confirmed by a large series.

In isolating the pneumococci, lung puncture cultures, blood cultures, sputum cultures, and mouse inoculations with sputum were used. Sputum cultures were preferable to mouse inoculations when a specimen of sputum which could be thoroughly washed was obtainable.

The percentage incidence of the different types of pneumococci in acute lobar pneumonia in adults corresponded very closely to that reported elsewhere, except for the low percentage of Group II and the correspondingly high percentage of Atypical Group II strains.

The percentage incidence of the types in lobar pneumonias in children, excluding bronchopneumonias, was approximately the same as in adults.

In three cases, two of which were lobar pneumonias in children and one an empyema in an adult, Atypical Type II pneumococci belonging to Subgroup IIB were isolated.

Of the bronchopneumonias, only one was due to Type I, and none to Type II. Types III, IV, and Atypical II occurred in about equal percentages. In the cases of acute and chronic bronchitis, otitis media and sinusitis, but one pneumococcus belonging to Type I was isolated. This was a strain grown from the pus of an otitis media and from the mouth sputum of a patient who had probably been a carrier for nine months.

Pneumonias due to Groups I and III occurred in epidemics, whereas those due to Group IV were more uniformly distributed throughout the year.

The total mortality of the pneumonias in adults was high (50 per cent.). The mortality among the Group IV cases was very high (57.2 per cent.), due in part to the greater age of the patients and the high percentage of associated diseases, including alcoholism which occurred in this group. In all of the groups the mortality was higher in cases with associated diseases than in those without.

Complications, apart from sepsis, were more frequent in the pneumonias due to the fixed types.

Blood cultures were positive in 33.3 per cent. of all cases cultured. The percentage of positive cultures and the number of colonies per cubic centimeter of blood were higher in the cases due to Groups IV and Atypical II than in those due to the fixed types. In all the types the mortality was very high in the cases with bacteremia and low in those without bacteremia.

The white blood cell count was low in pneumonias, due to the pneumococcus mucosus, and usually fell as the disease progressed. In the cases due to Groups IV and Atypical II strains, the count was higher in those recovering than in those dying; and in the Group IV cases, higher in those without bacteremia than in those with bacteremia. In the Group I pneumonias the counts averaged about the same in the cases which recovered as in those which died.

[J. B. H.]

#### ADENOMYOMA OF THE RECTO-VAGINAL SEPTUM.

CULLEN (*Bulletin of the Johns Hopkins Hospital*, Nov., 1917) discusses the subject of adenomyoma of the recto-vaginal septum. The classification of this condition is as follows:

1. Small adenomyomas lying relatively free in the recto-vaginal septum (Cullen's Case 1, Stevens' Case 1, Stevens' Case 5, Nadal's Case, Cullen's Case 6).
2. Adenomyomas adherent to the posterior surface of the cervix and at the same time to the anterior surface of the rectum (Lockyer's Case 2, Cullen's

(Continued on page 111.)

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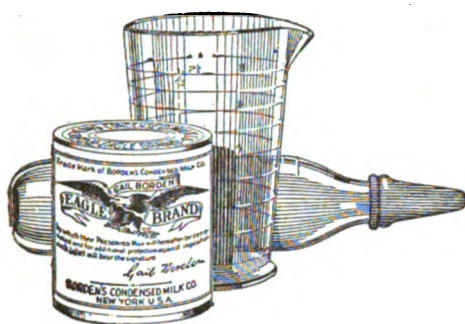
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(Continued from page vi.)

Case 3, Stevens' Cases 2, 3, 4, and 6, Jessup's Cases 1 and 2).

3. Adenomyomas gluing the cervix and rectum together and spreading out to one or both broad ligaments (Cullen's Case 4, Cullen's and Richardson's Case 5, Kellogg's Case, Cullen's Cases 7, 8 and 9).

4. Adenomyomas involving the posterior surface of the cervix, the rectum and broad ligaments, and forming a dense pelvic mass that cannot be liberated (Cullen's Case 2).

In an article profusely illustrated with remarkably fine photographs and diagrams he describes the treatment of this condition:

1. Where small, discrete nodules exist in the posterior vaginal vault, these may be readily removed through a vaginal incision, as was so successfully done by Stevens.

2. Where the growth occupies the posterior surface of the cervix and extends laterally, the ureters should be dissected out carefully and a complete abdominal hysterectomy should be performed.

3. If the growth be firmly adherent to the rectum, a wedge of the rectum should be removed, together with the uterus. It has been found best, after freeing the uterus on all sides, to open up the vagina anteriorly and laterally. The uterus and the rectum can then be lifted farther out of the pelvis, thus facilitating the removal of the necessary wedge of the anterior rectal wall. The uterus can be used as a handle, and the necessary rectal tissue and the uterus removed as one piece.

4. Where the lumen of the bowel is greatly narrowed, a complete segment of the rectum should be removed together with the uterus, and an anastomosis made.

5. In desperate cases, where everything in the pelvis is glued together, as in Case 2, an ideal procedure is out of the question. The patient will not stand a long operation and, if she could, a satisfactory result could not be obtained. In such a case it would be better to cut across the sigmoid, invert the lower end, close it, and bring the upper end out through the abdominal wall of the left iliac fossa, making a permanent colostomy. When the patient has, to some extent, regained her strength, the uterus, the lower portion of the rectum and the broad ligament tissue can be shelled out as one piece.

He gives the details of nine cases. [J. B. H.]

#### THE CULTIVATION OF TUBERCLE BACILLI FROM THE CIRCULATING BLOOD IN MILIARY TUBERCULOSIS.

CLOUGH (*Bulletin of the Johns Hopkins Hospital*, Dec., 1917) presents the result of her work in isolating tubercle bacilli from the circulating blood in miliary tuberculosis. She concludes that the occurrence of tubercle bacilli in the circulating blood is relatively infrequent (6.7 per cent.) in all forms of tuberculosis, whereas in miliary tuberculosis, tubercle bacilli occur in the blood in a large percentage (66.6 per cent.) of cases. In a table she presents details of 1508 cases collected from the literature and presents the details of four of her own cases. She succeeded in growing tubercle bacilli for the first time from the circulating blood of five patients with miliary tuberculosis.

In spite of a large amount of work which has been done on the subject of bacillema in tuberculosis, there seems to be very little information based on reliable methods of study and has been shown definitely that tubercle bacilli may enter the blood stream, but relatively little is known as to the conditions in which this occurs, its frequency and regularity, the number of organisms present or its diagnostic or prognostic significance. Blood cultures then are suggested as an aid in the differential diagnosis of acute miliary tuberculosis from other non-tuberculous in-

(Continued on page 2.)

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(1753)

(Continued from page viii.)

fections. Direct cultures from spinal, pleural, peritoneal and other fluids are recommended in those cases in which tuberculosis cannot be demonstrated by smears. [J. B. H.]

### HYGIENE AND PREVENTIVE MEDICINE.

#### THE LOCAL TREATMENT OF MENINGOCOCCUS CARRIERS WITH ANTISEPTICS.

FILDES AND WALLIS (*The Lancet*, October 6, 1917) discuss the local treatment of meningococcus carriers with certain antiseptics, and look at the results as a whole.

They conclude that one-third of the men recover spontaneously, and that none of the methods of treatment tested has any conspicuous merit nor has one any obvious advantage over another. This result is what might be expected from analogy with work on diphtheria carriers. [J. B. H.]

#### THE RELATIONS OF TUBERCULOSIS TO WAR CONDITIONS.

NEWSHOLME (*The Lancet*, Oct. 20, 1917) discusses tuberculosis and the war. He notes the increased mortality not only from tuberculosis in all its forms, but also from influenza and bronchitis during the past three years. After reviewing the methods of administrative control of tuberculosis in England at the outset of the war, he discusses the difficulties and defects of this system as shown up by war conditions. These difficulties and defects may be considered under the following headings: (1) With relation to the patient: Owing to the increased demand for labor and higher wages, poor patients with tuberculosis are not seeking medical advice as was formerly the case. (2) With relation to the private practitioner: It is evident that, with so many of those in military service, those remaining are overworked and cannot do as much good or give so much individual attention as was the case prior to the outbreak of the war. (3) The tuberculosis officer: Many full time persons of this nature have been replaced by men working only part time with, naturally, poor results. (4) Sanatoria: The results from the sanatoria are not so good as formerly, owing to the fact that not only are incipient cases less frequent but also advanced consumptives who formerly would not have been admitted to a sanatorium are now sent there because there is no other place for them to go. Sanatorium and hospital treatment are the most important parts of any war program for tuberculosis. Unless many beds in each of these institutions are available such a program is bound to fail. [J. B. H.]

#### THE VALUE OF CALCIUM SULPHIDE IN TREATMENT OF POISONING BY MERCURIC CHLORIDE.

HASKELL AND COURTNEY (*Jour. Lab. and Clin. Med.*, Nov., 1917) criticize the work so far done on the use of calcium sulphide in mercuric poisoning and conclude that the value of intravenous injections of solutions of this substance depends chiefly or entirely on the fluid which is introduced, and not on the sulphide, and also that results fully as good can be secured by the intravenous injection of physiologic salt solution. The intravenous injection of calcium sulphide is a procedure fraught with actual danger and it is possible that cases of mercurial poisoning may have the lethal exitus hastened rather than retarded by this administration of calcium sulphide. Hemolysis is very liable to be introduced. The authors suggest that in mercurial poison such methods as gastric lavage, colonic irrigation, hot packs, and the free use of fluids, intravenously, subcutaneously, by rectum and by mouth, should never be neglected. [E. H. R.]

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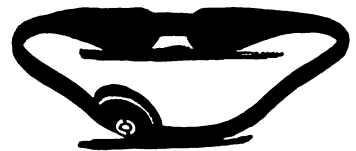
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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

February 14, 1918

<b>ORIGINAL ARTICLES</b>	
<p><b>SUGGESTIONS ON THE CARE OF MENTAL CASES.</b> By <i>Frederick H. Packard, M.D., Waverley, Mass.</i> ..... 211</p> <p><b>RELATION OF INDUSTRIAL SURGEON TO INDUSTRY AND TO SOCIETY.</b> By <i>John F. Curran, M.D., Worcester, Mass.</i> ..... 215</p> <p><b>ORGANIZED PROVISION FOR THE CARE OF THE SICK IN MASSACHUSETTS.</b> By <i>G. E. Whitehill, M.D., Everett, Mass.</i> ..... 217</p> <p><b>GASTRO-DUODENAL PERFORATION: A NEW DIAGNOSTIC SIGN.</b> By <i>Martin T. Field, M.D., Salem, Mass.</i> ..... 220</p>	<p><b>Diseases of Women.</b> By <i>Henry Sturgeon Crossen, M.D.</i> ..... 227</p> <p><b>Surgical Contributions.</b> By <i>Rutherford Morison, M.B., F.R.C.S.</i> ..... 228</p> <p><b>Three Clinical Studies in Tuberculous Predisposition.</b> By <i>W. O. Rivers</i> ..... 228</p>
<b>EDITORIALS</b>	
<p><b>WAR NEPHRITIS</b> ..... 229</p> <p><b>REPORTS OF HOSPITALS FOR THE INSANE</b> ..... 230</p> <p><b>THE VENEREAL DISEASE PROGRAM IN MASSACHUSETTS</b> ..... 231</p> <p><b>MEDICAL NOTES</b> ..... 232</p>	<p><b>THE MASSACHUSETTS MEDICAL SOCIETY</b></p> <p><b>NOTES FROM THE DISTRICT SOCIETIES</b> ..... 235</p>
<b>CLINICAL DEPARTMENT</b>	
<p><b>SEVERANCE OF THE CHORDA TYMPANI NERVE.</b> By <i>Irving Sobotky, M.D., Boston</i> ..... 234</p>	
<b>SOCIETY REPORT</b>	
<p><b>THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.</b> <b>MEETING OF OCTOBER 10, 1917.</b> ..... 234</p>	
<b>BOOK REVIEWS</b>	
<p><b>Occupational Therapy.</b> By <i>George Edward Barton</i> ..... 226</p> <p><b>Ligations and Amputations.</b> By <i>Prof. A. Broca</i> ..... 226</p> <p><b>Gynecology—The Practical Medicine Series.</b> Edited by <i>Emilius C. Dudley, M.D.</i> ..... 226</p> <p><b>Handbook of Gynecology.</b> By <i>Henry Foster Lewis, M.D., and Alfred de Roulet, M.D.</i> ..... 227</p> <p><b>The Principles of Gynecology.</b> By <i>W. Blair Bell, M.D.</i> ..... 227</p>	<p><b>THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.</b> By <i>Lyman Asa Jones, M.D.</i> ..... 226</p> <p><b>THE BRITISH MARRIAGE RATE AND THE WAR</b> ..... 226</p> <p><b>A NEW HIPPOCRATIC MANUSCRIPT</b> ..... 227</p> <p><b>ORTHOPEDIC SURGERY IN WAR</b> ..... 227</p> <p><b>A BRITISH TRIBUTE TO DR. JANeway</b> ..... 228</p> <p><b>LATTSOM AND THE LONDON MEDICAL SOCIETY</b> ..... 229</p> <p><b>NOTICES, RECENT DEATHS, ETC.</b> ..... 244</p>

### Original Articles.

#### SUGGESTIONS ON THE CARE OF MENTAL CASES.\*

BY **FREDERIC H. PACKARD, M.D., WAVERLEY, MASS.**

I HAVE no theories to advance. My remarks are based on practical experience at this hospital.

Before coming to McLean Hospital I had the privilege of a service in one of our largest and best general hospitals, where I was associated with men of high standing in the medical profession and from whom I felt I had learned the best methods of treatment. I still believe that was so for the most part, but my experience here has shown me that their treatment of delirious cases could have been improved. My experience here has also taught me that there are many general practitioners who make the same mistakes. Hence I am led to take advantage of this occasion to make such suggestions.

In the general hospital a good many delirious conditions arose from various causes. These patients were usually segregated in two of the lower wards where, because of their predominance, they made a striking and lasting impression on me. Some were comparatively quiet, while others needed restraint. I never felt at that time that they were not well cared for. They were kept clean and were given such nourishment as they could be induced to take;

\* Read at the Semiannual Meeting of the Middlesex South District Medical Society, held at McLean Hospital, October 10, 1917.

which, on the whole, however, was a very small amount, often but a few ounces in twenty-four hours and sometimes but a few spoonfuls. We were not especially concerned, perhaps, because in our mind the one important thing was to produce quiet and sleep. This we tried to do by, and only by, the use of sedative drugs. When the results were unsatisfactory, as they usually were, at the advice of the visiting staff we constantly increased the frequency and size of the doses and added to the variety of the drugs. Bromide, chloral, hyoscyamine, morphine and others were used, according to the fancy of the prescribing physician. We were attentive and persistent in our medication, and sooner or later, but always in a relatively short time, the patients became quieter and weaker and many of them died. We felt badly but accepted it as the inevitable.

Here at McLean Hospital I found a considerable number of similar patients, and when I observed the methods of treatment here it seemed as though the physician in charge was woefully lacking in therapeutic knowledge and might really benefit from my recent general hospital experience. The restlessness, activity and sleeplessness of the patients seemed of small concern to him and he apparently made no attempt to relieve them. No sedative drugs were prescribed. His chief and seemingly only interest was in whether their bowels had moved properly, and whether they had taken a sufficient amount of nourishment, and I noticed that to him sufficient meant a considerable amount.

I can still see in my mind a frail, emaciated woman, her tongue thickly coated, sordes on her

teeth, with thin and rapid pulse. She could not or would not eat. I was told to tube feed her at once. My suggestion that she was so weak that it might kill her was ignored. The stomach tube was passed, milk and eggs were poured down, although it seemed to me that her protesting struggles would use up what little life was left. She did not die, however, but lived to be fed again and again, and almost with each successive feeding, her pulse improved in rate and volume. She began to gain in strength and weight, sleep came and soon after her delirium disappeared and her complete recovery was rapid. I watched this transformation with much interest and no little surprise, and now for over fifteen years I have seen the same results accomplished many times by the same treatment. I recall only two cases in that time who have died. These were two men whose physical appearance indicated greater resistance than they had, for which reason tube feeding was delayed too long.

The history of this particular woman was somewhat as follows. She had called in her family physician because she felt tired and nervous and was unable to sleep well. The small doses of bromide prescribed at first, having little effect, were increased and continued until she began to have hallucinations of sight and hearing. She became difficult to manage and hard to keep in bed. More strenuous means seemed necessary and repeated doses of morphine were given. Meanwhile she had taken very little nourishment for a considerable time and practically nothing for a week preceding her admission to this hospital. I do not know just how serious her condition was when the family physician was summoned, but she came here with a typical drug delirium from which she recovered when the drugs were eliminated from her system and her general physical condition had been built up by food. It is very probable that if her family physician had prescribed fresh air and moderate exercise, and had insisted upon and depended upon a liberal amount of nourishment for his sedatives, the patient would have been spared the delirium and the necessity of hospital treatment.

I am sorry to say that this is not an isolated case, but a type of which we get many, and I am still more sorry to say that many times the physician fails to realize how much he is responsible for the condition.

There is another type of case where the physician is not responsible for the initial delirium, but where a similar mistake is often made. Recently, a young woman was admitted who had been delivered of a child some two or three weeks previously. Now child-bearing is usually a more or less exhausting experience. In this particular case it was especially so because vomiting had persisted throughout the pregnancy and the patient came to labor in poor physical condition. Delivery was accomplished without any special

difficulty, but a few days later mental symptoms appeared. The patient became talkative and sleepless, and somewhat active. Bromide and morphine were given, but very little food had been taken since delivery, and none at all for four days previous to admission. On arrival she was stupid, knew nothing, and was in a state of extreme physical exhaustion, her pulse rapid and hardly perceptible at the wrist. It seemed probable that she would die, as I doubted very much whether she had sufficient vitality left to use food. She would not eat and was tube fed. It was three or four days before her pulse showed much improvement, but after that she gained rapidly, and at the end of a couple of weeks she was clear enough to recognize and talk with her relatives and strong enough to leave her bed. She is not yet recovered from her psychosis, but her physical condition is good and I anticipate a complete recovery.

These puerperal cases are again a type of case of which we get many and are naturally of interest to the general practitioner. Many of them are of short duration with us, even with the superimposed drug delirium and exhaustion with which we have to contend. I am inclined to believe that if the physician would avoid sedatives and insist upon abundant nourishment, even tube feeding, if necessary, many of these deliria would be aborted in so short a time or would be of such slight degree, that they could be cared for at home.

Let me tell you of another very interesting case. A young woman, in good physical condition, began to feel mean and somewhat depressed, and a little later suddenly developed an active delirium with high temperature and rapid pulse. She was brought to this hospital at once. She had been much constipated and her abdomen was considerably distended. After repeated enemata an enormous quantity of fecal matter was evacuated, and the abdominal distention relieved. My feeling at that time was that with proper regulation of her bowels and a maintenance of her physical condition, the temperature and pulse would soon drop, and she would make a speedy recovery. Prolonged constipation in certain individuals will occasionally produce such a picture. She would not take a sufficient amount of nourishment, and in order to lose no time,—for loss of weight and exhaustion are often rapid in an active condition such as hers,—tube feeding was begun at once. The pulse and temperature, however, did not fall, the delirium continued and within a week it was discovered that she had typhoid. The blood showed a positive Widal reaction. With the liberal amount of nourishment, given by tube, her strength and weight had remained good, and after about two weeks the delirium subsided. She was clear and willing to eat. The liberal diet was continued, and long before the fever subsided she was strong enough to have left her bed if it had seemed wise. When she was allowed to get up,



she had lost but about four pounds in weight, a very small percentage for a large woman of one hundred and sixty pounds. She left the hospital soon after and in a short time resumed her work.

In most general hospitals, or cared for by many general practitioners, such a case, refusing food so long, would have lost so much weight and become so physically exhausted, that it is doubtful whether the resistance would have been sufficient to withstand the toxemia, or at best, the patient would have been so emaciated and weakened as to require a long convalescence. I recognize that now-a-days the profession generally have been feeding typhoids liberally, with good results, but, so far as I know, this is limited to those who will eat.

The alcoholic deliria or delirium tremens cases form another large group often treated in general hospitals and with rather poor results, the death rate being discouragingly high. If you are not already familiar with the much more successful treatment of these cases at the Psychopathic Hospital since its opening, it is worthy of your attention. Our experience here is limited with such cases, as it is not the usual policy of the hospital to receive them. The last patient admitted was a young society woman who had been a moderate drinker for some time, but who for some months had been drinking excessively, often to the point of extreme intoxication. She had been rising earlier and earlier for her morning drink until just before admission she found it necessary to rise as early as 3.00 a. m. On arrival she was clear but exceedingly tremulous. While not in bad physical condition, she showed her lack of nourishment; for, like most alcoholic cases, she had let drink take the place of food, under which circumstances the alcohol is always more poisonous and the system less able to withstand the toxemia. She became actively delirious at once. Her hallucinations of sight were extremely terrifying. In short, she was in a condition to exhaust herself rapidly. The alcohol was withdrawn, she was tube fed and put in the prolonged baths. On the second or third day she had several severe convulsions and some lesser ones. This active delirium persisted for about a week, during which time she was without sleep. At one time the weakness of her heart demanded digitalis. Except for this, the only treatment was food three times a day. In spite of the severity of her attack, her strength was sufficiently maintained in this way, and once her delirium was over she made a rapid and complete recovery.

I feel very positive that if we had depended upon what little nourishment the patient might have swallowed, she would have soon become exhausted and died. You will notice that she not only received no sedative drugs, but that the alcohol, the causative poison, was immediately discontinued.

I was recently consulted about a "most peculiar case," as the surgeon called it. The

patient had been operated upon for empyema, and had properly been given some morphine after operation. But as he continued somewhat restless, a considerable amount of bromide and some morphine had been continued. The peculiarity of the case was that while his empyema was doing well, he had developed a mild delirium which threatened to become worse. I was unable to see the case as it was at too great a distance, but I have no doubt that, providing his surgical condition remains satisfactory, with withdrawal of the sedatives and with the giving of a sufficient quantity of nourishment, the delirium will soon disappear. In any event I can see no indication for a continuance of the drugs. If the delirium continues, it is due to the patient's septic condition or exhaustion, and sedatives will not help these.

I would like to call your attention to one other case which illustrates how sedative drugs may mask important symptoms. Some time ago, a middle-aged man was brought here in a delirious condition. He was entirely irrational, unable to answer questions or to give any account of any symptoms, or make complaint of discomfort or pain. His temperature and pulse were somewhat elevated. There were no physical signs and it was impossible to determine what, if anything, besides drugs, was causing his delirium. He died a few days later and at autopsy I found an abscess of the frontal sinus which had perforated the inner table of the skull and involved the anterior portion of the frontal lobe of the brain. The history of the case was that, some weeks before, the patient had had a moderately severe attack of influenza. During his convalescence a severe headache had developed, for which, large doses of drugs had been given, and he was brought here some time after the onset of his delirium. It is quite probable that except for the drug delirium, the patient would have been able to make known his symptoms clearly enough to his physician to have enabled the latter to provide such surgical relief as was indicated.

At this hospital a very large percentage of the patients are the so-called manic-depressive excitements, or acute manias. In these we have a real psychosis, not necessarily associated with any physical disease and usually of many weeks' or even months' duration. It is very doubtful if the general practitioner can take proper care of these cases at home. I should advise their removal as soon as possible to a properly equipped hospital. If there is necessary delay in doing so, feed them in the meantime, if they are not eating, but do not handicap the patient or the hospital physician to whose care they are given, by superimposing a drug delirium.

Then, again, we have the manic-depressive depressions or melancholias. These cases, too, are usually of long duration, and it is again questionable whether they are suitable cases for home treatment. Any melancholy patient is potentially suicidal, and it is very often the mild

cases, whom an inexperienced person would not suspect, who accomplish their purpose. While the deeper depressions are more frequently recognized as dangerous to themselves, and rightly so, they are often so inadequate and retarded as to fail to act though they have the desire. For this same reason they frequently refuse food, and also with suicidal intent.

If you are obliged to care for the manic-depressive excitements or depressions at home, you will find a nurse trained in a hospital for the insane a great comfort and help. Such nurses are not afraid of the excited cases and they know how to handle them. They are also alive to all the possibilities of danger in the depressed cases. I am often reminded of one of our old Boston physicians who, whenever a delirium developed on his ward in the general hospital, used to call for one of those McLean crazy nurses, and, on her arrival, would stand back and watch with wonder and admiration the fearless and tactful way in which she cared for the patient.

In the manic-depressive excitements, owing to their great activity and lack of sleep, the principal danger is one of physical exhaustion. The treatment here at the hospital is directed towards preventing the exhaustion and adding to the weight. This can be accomplished largely by food. Many eat well. Those who do not are tube fed at once and are fed regularly three times a day. The exhaustion is further combated by use of the continuous baths. Most maniacal patients like to play in water and they usually take readily to the tubs. Here their activity is limited to the splashing of water and much less strength is used up than is the case when, confined to their rooms, they run about, jumping from bed to window sill and back, and pounding on the door. Moreover, the warm water has a tendency to relieve the tension, and the most excited patients frequently lie quietly for hours and sometimes even sleep in the water. As a rule, they get more sleep at night after a day in the tubs. Those of you who have seen the baths have noticed that the rooms are of good size, well lighted and have low windows through which the patient can look out. Such rooms add much to their contentment. The water is kept at 99° by means of a mixer and by constant flow of the water into the tubs, the inlet being at the bottom of one end, and the outlet at the top of the other. Sedatives are useless. Only in large and repeated doses do they have any effect and then only a toxic one such as already described. Moreover, they upset the digestive system, interfering with appetite and assimilation, thereby impairing the usefulness of our most efficient remedy,—food.

Again, in the melancholy cases, our chief aim is to maintain and improve the physical condition,—very many of these cases need tube feeding,—and to guard against self-injury. The general sluggish reaction of the depressed patients with their limited activity gives rise to

obstinate constipation, which needs to be corrected and which, when relieved, often leads to improvement of appetite. Many of these patients are also troubled with insomnia. This needs no special treatment, but takes care of itself with the general improvement of the patient. Use is also made of hot air and shower baths, exercises with Zander machines, and out-door sports to help in improving the physical condition. Just as soon as they are able to cooperate, they are given diversional occupations of different kinds, which tend to arouse normal and healthful interests and to crowd out melancholy and delusional ideas.

All the manic-depressive cases tend to lose weight at first, and oftentimes it is necessary, especially with excited cases, to give an extra large amount of nourishment. Sooner or later they begin to gain weight, an indication that recovery has probably begun. The rise of the curve of mental improvement usually follows the rise in the weight curve.

In conclusion, let me say that delirious states arise as a result of exhaustion or toxemia or both. The toxemia may be due to an auto-intoxication or to poisons taken into the system from without. If we bear this in mind, the indications for treatment are clear: prevent or treat the exhaustion, eliminate the toxemia as rapidly as possible and provide strength to combat it while it lasts. This can be accomplished by abundant food and by a careful attention to the bowels.

Sedative drugs only add to the toxemia and handicap the digestive system, upon which we must depend for the maintenance and development of recuperative power. They are irrational and so contraindicated that it is difficult to understand their general use. From questioning different men I find two explanations: one, that they deem sleep the most important thing to gain; as if sleep alone could add strength; whereas, at best, it merely saves what strength one has, a most desirable thing to do, but not in itself enough. A positive addition is necessary, which food alone can furnish. A second explanation is that the family demands results, expects the patient to be quieted. The physician, therefore, must give drugs to preserve his reputation. I have already shown you that the results gained from drugs are not such as to add to anyone's reputation. I believe it best to be frank with the patient's friends and to explain the real situation: the public can be and are being educated. Not infrequently a relative, after seeing a patient grow worse at home with drugs and recover in the hospital without them, is inclined to be critical of his family physician's judgment.

My remarks have been limited to a discussion of the acute recoverable cases. Time does not permit a consideration of the organic and dementing types.

RELATION OF INDUSTRIAL SURGEON  
TO INDUSTRY AND TO SOCIETY.\*

BY JOHN F. CURRAN, M.D., WORCESTER, MASS.

IN 1911 the Norton Company engaged the services of an industrial surgeon. His duties were:

1. To make physical examinations of all prospective employees and reexamine all physically defective employees and to advise corrective measures.
2. To treat accidents immediately after they occurred and to give subsequent treatments.
3. To make examinations and give advice in cases of sickness.
4. To formulate and control sanitation measures throughout the works.
5. To promote health education among employees.

## PHYSICAL EXAMINATIONS.

The best time to examine a man is before he is hired. First, it enables the employer to place a man at the kind of work for which he is best fitted physically. Second, it enables the doctor to advise the employee regarding any defects that he may have and of which he may not be aware. It gives the physician an opportunity to enlist the man's cooperation in making an effort to overcome his defects, where possible, and thus increase his physical efficiency. Third, it prevents the introduction into the factory of men who are undesirable because of severe defects. Fourth, it prevents contagious diseases entering the factory and becoming established there. A complete examination of every employee is, of course, very expensive to the employer, but the several advantages outlined tend to offset the question of expense.

So much for the employer's side; now let us consider it from the angle of the employee. This thorough physical examination has also many advantages for the employee. First, he is informed of any defects which the doctor finds, and is assisted in obtaining relief. Second, he is not given work to do for which he is not physically fitted. Third, he knows that every other man in the factory has had a similar examination and appreciates the fact that he is safeguarded from contagious diseases. Last, he feels that the employer is taking a personal interest in his condition, and that he can go to the plant doctor for further advice at any time. As the average shop employee, moving from place to place, has no family physician, he feels sure that the man employed in the capacity of industrial surgeon must be competent to handle his case.

Some labor organizations have objected to physical examinations on the ground that it infringes on the liberty of the individual. Every shop has its own rules, and the examination is

merely one of these. If a man objects to this, he is free to seek work elsewhere.

Another point usually brought up is that it enables an employer to reject a man on account of physical defects when he might otherwise have employed him. This gives the labor organizations greatest concern because they realize that oftentimes certain men would be hired in this same factory were no physical examination required. Here it is necessary to remember that the United States Government established the precedent, in examining candidates for army, navy, and civil service positions. Again, the labor unions fear that information of defects in certain men might be passed from employer to employer, thus making it possible to blacklist a man. They fail to realize that such information is of a professional nature, and secrets thus obtained are as carefully guarded as in a doctor's office.

The examination should be as thorough as that required for a first-class insurance policy, because in the departments of many factories the work is of a hazardous nature. The hospital that is a part of the business institution must be particularly careful in such places. Physical examination prevents a defective man from being put to work in these departments. This benefits the employee because it transfers him to work for which he is fitted, and saves him from the risk of serious accident or illness, which might result in death. It benefits the employer because it enables him to secure adequate protection at the most reasonable rates.

Considering the number of men examined, and the different walks of life from which they come, rejections are few—contrary to the general opinion. Statistics show 3%. The surgeons actually make no rejections. We merely note the man's defects, classify him as an A, B, C or D risk and refer him to the employment department, which accepts or rejects him, according to his probable value. Sometimes the employment manager finds a man too old or physically unfit for the work for which he applies, but instead of rejecting him arbitrarily he finds work for him which is suited to his age and physical condition. A man is definitely rejected if he is blind in one eye, because work on grinding-wheels is particularly hazardous to the eyes, even when goggles are worn; and should he sustain an injury which would result in losing the vision in the good eye, the law would require us to compensate him for blindness of both eyes, even though we were responsible for the loss of only one. A person who is blind in one eye certainly does not want to risk losing the other, and the employer knowing the danger is not willing that he should, aside from the fact that compensation would have to be paid should total blindness result. A man cannot be accepted when his vision is reduced to 1/2 in both eyes, for obvious reasons.

All cases of contagious diseases, including, of course, tuberculosis, debar a man from employ-

\* Read before the Twentieth Century Club of Worcester, November 10, 1917.

ment. We ask physicians to lay particular stress on this part of the examination because nothing will disrupt a working organization more disastrously than an epidemic of any contagious disease.

We do not recommend for employment any applicant who has more than a second-degree hernia. Hernia is the bane of industrial surgery. The Latin and the Asiatic races, because of their low social rating, due to lack of education and consequent mode of living, do the most laborious work in our factories. They are most prone to hernia because their diet does not include muscle-building food. When they sustain this injury they cannot or will not work, and an operation becomes imperative, with its resultant loss of time and expense to the employer. Here again the physical examination proves its value. Sometimes a man sustains this injury outside the factory. Were he to aggravate this condition while at work, the company would be held as responsible as if it were to blame for the incidence of the hernia.

We reject all cases of heart disease with disturbed compensation, that is, shortness of breath, swelling of extremities and palpitation.

Varicose ulcer is a menace because certain forms of occupation either prevent entirely or delay the healing. This condition is likely to recur again or to break out in a new place as a result of a trivial injury.

All cases of marked hypertension are rejected because certain kinds of work might increase the man's blood pressure, which, in turn, might induce cerebral hemorrhage. This would make us responsible for his death or incapacitation, as the case might be.

A man presenting a major defect (by major defect is meant a hernia, a heart or lung lesion) is reexamined every three months, or oftener, if his condition warrants. The reexamination plays a threefold part; it benefits the employer, the employee, and the examining physician. It enables the employer to have efficient workmen; it enables the employee to keep in such a fit condition that he may earn the largest possible wage, and it gives the physician valuable information as to the conditions under which certain defects do well. It also makes it possible for him to see that remedial measures are intelligently carried out.

The second important division of the industrial surgeon's duties is the treatment of accidents immediately after occurrence. The Workmen's Compensation Act was drawn in order to compensate the employee for injury received in the course of his employment. This compensation was divided into two parts—one a reparation part, which provided medical care to repair the injury; the other a compensatory part, to insure the employee against complete financial loss while incapacitated. The underlying thought in the reparative part of the provision is to alleviate suffering, to produce sound

and rapid healing of the injury, and to promote a quick return to work.

The section states that medical service shall be provided for a period of fourteen days, so that the injured workman, even though not severely enough injured to prohibit work, is entitled to medical service. This is not only reparation, but prophylactic.

In Massachusetts there are two recognized methods of complying with this law: first, the employment of a factory surgeon; secondly, the sending of the injured employee to a surgeon employed by the insurance company.

A great advantage in the factory hospital system is this: there is a minimum loss of time. The length of time which elapses between the occurrence of the injury and the time of the first treatment is of the utmost importance. Adequate treatment promptly applied will, in 95% of the cases, result in adequate disinfection and consequent prompt healing of the wound. Statistics show that infection increases in proportion as the time lengthens between the occurrence and first treatment of the wound. In our plant, covering several acres, there would be considerable loss of time and risk of infection to the patient coming to a centrally located hospital, and to offset this, we have established four sub-hospitals. There the minor cases are treated and the men sent back to work. They are examined on the following day by the surgeon on his daily visit. The cases of a more serious nature are given first aid and sent to the main hospital, if the case is an ambulatory one. If not, the surgeon is summoned, and after examination prescribes or renders the necessary treatment. This procedure is always possible because there is a doctor in the plant from 8 a.m. until 6 p.m., and one on call from 6 p.m. to 8 a.m.

Contrast this method with the so-called insurance form! Where the factory is large, they have a nurse; if not, some one who is more or less skilled in the treatment of wounds is selected to render first aid. If, in his opinion, the patient needs further treatment, he is either sent or taken to the insurance doctor's office, provided the severity and extent of the injuries warrant it.

The industrial surgeon classifies his cases into three groups: first, those cases which need absolute rest to promote rapid healing; second, those whose injuries make it impossible for them to do their usual work, but permits work of less exacting nature to be done; third, those whose recovery will not be retarded by performing their usual duties after the first treatment. The industrial surgeon is well qualified to judge in these cases because he knows the man's history, the nature of his work, and can solicit the aid of the foremen in placing the patient in a department where he may earn his wage without risk to himself or loss to his employer.

The surgeon employed by the insurance company is not usually acquainted with the man, nor with the nature of his work, and can decide only one of two things,—either the patient goes back to work or goes home. Often the patient makes his own decision after leaving the doctor's office.

After the first treatment, a man is told to report at the hospital at a specified time, which is determined by the nature of the injury. If he does not comply with this instruction, he is sent for and his condition is investigated, should he be at work. When we find that a man is loafing he is investigated by our "follow-up" man and is brought to the hospital or is visited by the surgeon personally. This is determined by our knowledge of the case and the investigator's report.

Sanitation is another of the difficult problems with which the industrial surgeon must cope. He must see to it that the men work in properly lighted and ventilated rooms and have proper toilet facilities. He has a corps of workers whose particular duty is to keep the toilets and washrooms clean, to supply receptacles for refuse, and cuspidors of such a kind as can be easily disinfected.

Health publicity is a field which offers vast possibilities for the betterment of health conditions in the community through the coöperation of doctor and workman. As it is practically impossible to instruct each employee individually, we issue pamphlets each month on some timely subject in surgery or medicine having some practical value to the workman. These are enclosed in the pay envelope, and are read and appreciated by most of the men. At stated times lectures are given to which the workman may bring his family.

Owing to the increasing interest in social insurance, I have purposely left my discussion of the treatment of sickness until last because these two topics are closely related. It is the duty of the industrial physician to treat minor illnesses. Experience has taught that the prompt diagnosis and treatment of illness may prevent serious disease, loss of time and suffering to the patient, and loss of profit to the employer, due to lessened production. When we find that a man is too ill to remain at work we urge him to consult his family physician. As you know, practically every physician depends on the workingman as his chief means of earning his livelihood. Were this source of income removed, it would seriously menace his practice. This might make the general practitioner antagonistic to the industrial surgeon, and adverse criticism given his patients would tend to reduce our efficiency. After a man has recovered from his illness he must present himself for examination before he can return to work.

Our methods open up vast possibilities in the field of preventive medicine, where everything depends on the individual. Much can be done

by education through the schools, by articles in papers and magazines, by lectures and motion pictures, but the most effective means is through direct contact with the individual. After our examination he knows either that he is sound or defective and, if the latter, he receives the necessary instruction to remedy his defects. He knows the type of work for which he is best fitted, and, finally, he knows what a thorough examination is.

If every workman possessed this knowledge we would have a campaign of preventive medicine which would affect the whole country.

## ORGANIZED PROVISION FOR THE CARE OF THE SICK IN MASSACHUSETTS.

BY G. E. WHITEHILL, M.D., EVERETT, MASS.

THE Commission on Social Insurance gave a special hearing for physicians, at the State House, September 26, 1917. One of the questions on which the Commission asked information was:

"To what extent are wage-earners able to avail themselves of free clinics in the State?"

The following data were prepared as an attempt to answer this question in a general way, and were presented in October and November by the author. The data herewith submitted for publication have been somewhat amended by the elimination of most of the items containing estimates since its presentation to the Commission, but with only a few exceptions are substantially as presented on the dates named.

Organized provision for the care of the sick in Massachusetts:

1. State or municipal hospitals, or boards for the care of those dependents requiring help in other ways beside sickness. During 1916, 3% of the population was cared for in this way.

2. Charitable hospitals, dispensaries and nursing associations, organized and financed by voluntary donors, the medical profession co-operating with free medical service, and the nursing being performed by pupil nurses. During 1916 from 12½ to 14½% of the population was aided by this group of institutions.

3. Special hospitals for dependents with chronic diseases.

4. Hospitals and institutions for the care of tuberculosis, contagious diseases, etc.

5. Private hospitals for the care of those who can pay well for all needed service.

The various institutions under group 2 comprise 100 or more hospitals, 39 with out-patient departments, 11 dispensaries and about 30 nursing associations. The aim is to help the large part of the population generally designated as wage-earners.

As a group, these institutions admit patients without regard to race, color, sex, religious belief, or ability to pay. Their purpose is to care

for accident cases and those suffering from acute or surgical diseases, whose greatest need of help comes from sickness.

There is, on an average, one institution for every 32,000 of the population, with an invested capital between \$45,000,000.00 and \$50,000,000.00.

During 1916 one person in eight and one-half of the whole population was treated at a hospital, or dispensary, making a total of nearly 450,000, the aggregate cost being nearly \$6,000,000.00. It is difficult to estimate from the published data the average cost of the out-patient and dispensary service. The out-patient service at the Massachusetts General Hospital for 1916 was \$0.51 per visit. Using this as a basis for out-patient and dispensary service for the whole state, the average weekly cost for hospital service was \$15.70. The average stay in the hospital was two weeks and one day. One person in 26 or 27 of the population (4%) was cared for in a hospital. One person in 12 of the population (8½%) paid between three and four visits to a dispensary, or out-patient department of a hospital. One patient out of three was treated in a hospital free. One patient out of three paid a part of the cost at a hospital. One patient out of three paid more than cost at a hospital. For the Metropolitan group of hospitals and dispensaries, one patient in two was free. Outside this district one patient in five was treated free. For the whole state the average for both being 34% free. The Metropolitan group comprised 7-12 of the hospital cases, 5-6 of the out-patients, and nearly all of the dispensary patients. The service at both the out-patient departments and dispensaries was either free, or merely nominal. Five district nursing associations served a population of 1,200,000, making over 200,000 visits on 2% of the population, one person in fifty being cared for on an average of eight visits.

The income derived from patients visiting the hospitals, out-patient departments and dispensaries, in 1916, was \$3,372,000.00, the amount of free treatment being \$2,614,000.00, or 43%. For the dispensary and nursing service, more than sixty per cent. was free.

The summary herewith submitted is based on the data published in the 38th annual report of the State Board of Charity for 1916. While the data of many of the hospitals are incomplete in some of the items tabulated, many of the deficiencies have been supplied by the office of the State Board of Charity. When no data were available an estimate was made, based on the general average of the group of hospitals considered. Most of the institutions tabulated are classed as charitable corporations, but by using the service available principally for the needs of wage-workers as a basis of classification there are 89 hospitals mainly for acute diseases, naturally coming under group 2, that served in 1916 approximately 134,000 patients. There are five

large hospitals devoted largely to chronic diseases that cared for 2015 patients, on an average of 105 days each, with a total bed capacity of 730.

The service rendered by the South Department of the Boston City Hospital and the Haynes Memorial of the Massachusetts Homeopathic Hospital in 1915, provided for 4469 patients suffering from the common forms of contagious diseases and are included in the totals of the 89 hospitals already mentioned. The average stay was a little over 30 days, and the average cost about \$40.00 for each patient. If the same ratio to cost and bed capacity prevailed for 18 smaller contagious hospitals, with a total bed capacity of 574 beds, the service would provide for 5740 patients, at a cost of approximately \$224,750. There are six small hospitals with incomplete data, having about 100 beds. Using the average for the acute hospitals of 14 patients per bed, for the whole number, and the average weekly cost of \$15.70, there would be a service available for 1400 patients, at a cost of \$52,752.

The total hospital service under extended group 2 provides 118 hospitals caring for 142,763 patients.

There were 39 hospitals that maintained an out-patient department and treated approximately 240,048 patients, with a total of 862,527 visits. Eleven Boston dispensaries treated 65,752 patients for 244,468 visits. The combined hospital out-patient and dispensary service totaled 449,054 patients, at a cost of \$5,988,406.00.

When giving the proportion of service to the population of the whole state, the estimate of 3,779,033 was used, the same as used by the State Department of Health,—estimated population of Massachusetts for July 1, 1916.

The institutions tabulated do not as a rule care for tuberculosis cases, but some overlapping is inevitable when the available institutions are limited.

Number of nurses registered by Board of Registration of Nurses since October, 1910, is 7363.—Report of Board of 1916.

#### PRESENT EQUIPMENT FOR SERVICE UNDER EXTENDED GROUP 2.

One hospital,	
or dispensary, for every 32,000 of the population	
One hospital bed for every 375 of the population	
*One pupil nurse for every 750 of the population	
One reg. nurse for every 513 of the population	

While an effort has been made to determine the approximate number of beds available for the care of sickness throughout the state, no rigid classification is applicable to many institutions. By classifying under group 2 several hospitals devoted to infants, a few caring for chronic or incurable diseases, and including the full capacity of two large hospitals with separate departments for contagious diseases, and 18 other hospitals for contagious diseases, we obtain 118 hospitals, with a total of 10,184 beds.

\* See Note on page 220.



Institutions classified under group 4 care for tuberculosis and the common forms of contagious diseases. The Massachusetts Anti-Tuberculosis League, under the date of April, 1917, reports 13 state institutions with a bed capacity of 1722 beds, 16 county or municipal hospitals with 1078 beds, and 29 private hospitals, sanatoria, or boarding houses with 551 beds, or a total of 58 institutions for tuberculosis with 3351 beds.

In October, 1917, the State Board of Health reported 21 hospitals devoted to the care of contagious disease, with a bed capacity of 1261, with two additional hospitals already authorized, having a bed capacity of 58.

Complete data for private and semi-private hospitals, comprising group 5, are not readily available. Polk's Medical Directory for 1914, supplemented by data furnished by Alice McIntire, Inspector of Incorporated Hospitals, who also supplied additional data for the hospitals classed under group 2, gives 121 hospitals or sanatoria, with a bed capacity of 3940 beds. Practically all the data were compiled previous to 1914, and it seems reasonable, in estimating the number of beds at present, to increase this number by at least ten per cent., to include natural growth and unavoidable gaps in the records, making the number of beds of a private nature at least 4340. The above classification does not include the Naval Hospital with approximately 250 beds under normal conditions, the Boston Quarantine Station with 300 beds, nor various isolation hospitals throughout the state, which would probably total nearly 1000 beds.

It seems a conservative statement, that under the four groups mentioned, there are approximately 20,000 beds designed in large part to care for acute diseases and that fully three fourths of this number are maintained by private initiative and private funds; the other fourth being maintained by either state or municipal hospitals, devoted to tuberculosis or contagious diseases, both of which are looked upon as matters of public concern.

Besides caring for the unfortunates generally designated as paupers, as well as those convicted of crime, the state cares for a relatively small group of dependents requiring special medical treatment covering long periods. The last printed report of the State Board of Insanity for 1915, page 94, gives 16,436 beds as the capacity of 16 or more institutions, providing for the insane, feeble-minded and epileptics. The report of the State Board of Charity for 1916 shows this board supervised the care of alcoholics at the State Farm, drug-users and inebriates at the Norfolk State Hospital, crippled children at the Massachusetts Hospital School and gave general medical and surgical care to a large group of unfortunates at the State Infirmary, requiring the use of 1200 beds for the four institutions. This last total group requiring approximately 18,000 beds, the number cared for approximating 25,000 patients maintained as public charges.

Dr. E. A. Codman of Boston has summarized the expense of this work in a paper printed in the BOSTON MEDICAL AND SURGICAL JOURNAL for March 22, 1917.

We quote the following:

"Some idea of the amount now spent in Massachusetts for the care of public health and sanitation, and for the maintenance and care of the sick, poor, and insane may be derived from the following figures:

INVESTMENT IN STATE INSTITUTIONS IN REAL AND PERSONAL PROPERTY.

Report of State Board of Insanity ..	\$ 17,610,837.84
Report of State Bureau of Statistics .	4,732,129.53
Report of State Board of Charities	
State Institutions .....	6,900,736.94
Certain (802) Endowed Institutions..	121,413,062.21
*Estimated from Report of State Bureau of Statistics. Municipalities and Towns .....	49,057,612.00
	<hr/>
	\$199,714,368.52

The annual expenditure for these purposes may be estimated as follows:

Appropriations for State Board of Insanity .....	\$ 6,199,647.91
State Board of Charities. State Institutions .....	
Certain (802) Endowed Institutions..	15,698,875.44
Report of Bureau of Statistics, Municipalities and Towns .....	13,730,586.46
Health Appropriation, 1915 .....	385,814.84
	<hr/>
	\$36,014,924.65

The sickness survey made in Boston in July, 1916, by the Metropolitan Life Insurance Co., reported that 35% of the patients under the care of a physician (Table 8, p. 18) were treated either at a hospital (24.2%), or dispensary, 11.3%.

From a medical standpoint the limitations attending the taking of most sickness surveys, renders the so-called facts, as well as many of the conclusions, open to question.

The Boston Survey records that 51.8% of the cases of sickness (see p. 14) had been sick six months, or more; 25% three years or more; 61.1% three months or more.

This class of patients do not fit in with the acute cases averaging only two weeks' care in a hospital, and are wholly unprovided for in any health insurance scheme so far advocated. They do help to swell the total sick roll used as a basis for computations. On page 11, Boston Survey, the statement is made that the statistics of the Rochester, New York, Survey, very nearly approximate the percentage of acute and chronic diseases recorded in the Boston Survey.

The Dutchess County, New York, survey recommends, for the proper relief of this county, with a population of 88,255; 43.6% urban and 56.4% rural, for all purposes, one hospital bed

\* NOTE.—If the annual expense is \$15,730,586.46, the investment may be determined as proportionate to the expenditure of the State Institutions to their investment.



to every 418 of the population. Massachusetts for a limited part of the service has one bed for every 375 of the population. The same report recommends the services of either a trained or untrained nurse for every 802 of the population. Massachusetts has one registered nurse for every 513 of the population.

Most sickness surveys fail to record either alcoholics or venereal diseases. Feeble-mindedness, alcoholism and venereal disease must be seriously considered in any helpful campaign to eliminate poverty or sickness. The field worker for Dutchess County was able to report only one case of venereal disease out of 1600 cases of sickness. From data on venereal disease supplied by the hospitals, the report recommends one bed for these diseases for every 6615 of the population—7.1% of the whole required for Dutchess County. (See p. 100.) Applying the same ratio for Massachusetts, there would be needed 572 beds for venereal diseases, or 17 beds less than the entire complement of beds at the Massachusetts General Hospital. The same survey recommends one bed to every 3042 of the population for alcoholics. For Massachusetts that would take 1242 beds, and would fill both the Boston City Hospital and Carney Hospital, with only 24 beds vacant. For psychopathic patients, one bed to every 4643 of the population is recommended. This would require 815 beds, and would fill the vacant beds at the Massachusetts General Hospital and Carney Hospital, fill both the Massachusetts Homeopathic Hospital and the Peter Bent Brigham Hospital, and leave over 40 patients on the waiting lists.

Thus five of Boston's largest hospitals would be required to care for the psychopathic, alcoholic and venereal diseases, estimated by the Dutchess County survey to comprise 30% of the necessary hospital service. The capacity of these five hospitals is 2586 beds—over one-fourth of the beds now available in the class of hospitals under consideration.

NOTE.—The purpose of compiling this summary of the medical work in Massachusetts has not been to cover the ground in any technically statistical way, but to give a general summary of what is being done, hoping that some one with more leisure and statistical skill will cover the subject in the near future more fully. During the past few months a number of valuable compilations have been made by members of the office force of the State Board of Charity, which should make a more accurate and fuller presentation of the subject much easier.

\* NOTE.—Dr. Laura A. C. Hughes, Chairman of the Survey Committee of the Massachusetts State Nurses' Association, reports the following as the approximate number of nurses available in Massachusetts Jan. 1, 1918.

Registered Nurses .....	4942
Graduates, not registered .....	1760
Red Cross Enrolled Nurses .....	892
<b>Total .....</b>	<b>7594</b>
PUPIL NURSES 1918.	
Approved Schools (85) No. Nurses .....	4413
Unapproved Schools (37) No. Nurses .....	620
<b>Total .....</b>	<b>5033</b>

## GASTRO-DUODENAL PERFORATION: A NEW DIAGNOSTIC SIGN.

By MARTIN T. FIELD, M.D., SALEM, MASS.,  
*Visiting Surgeon to the Salem Hospital.*

ANYONE who has had much experience with perforation of the stomach and duodenum must be impressed with the ease and certainty with which the diagnosis can be established in the majority of instances,—periods of stomach disorder, then sudden and severe pain in the epigastrium, immediately followed by general abdominal tenderness and inflexible rigidity, the points of maximum tenderness being usually over the ulcer site and the iliac fossae, especially the right. This is particularly true in duodenal perforation. The pulse may not be above 80; the temperature may be normal; there may be no evidence of collapse, yet a positive diagnosis can be made. The symptoms and sequence of symptoms are just as distinctive as they are in acute appendicitis.

The diagnosis, however, cannot always be so simply made. In some cases, the greatest difficulty may be experienced. The history of stomach trouble may be absent; pain may not be of the superlative type and, above all, the distinctive board-like rigidity may not be present.

In some of these cases we are forced to consider many possibilities—appendicitis, pancreatitis, cholecystitis, intestinal obstruction, mesenteric thrombosis, and even non-operative conditions.

There are probably many factors which lead to this confusion; the most important one is that which underlies the production of intra-abdominal pain. There has been much work done on this important subject by Lennander, Wilms, Kast and Meltzer, Ritter and others. The conclusions of all these observers are not the same, but the following views of Lennander have been accepted by most surgeons as conforming most closely to their operative experience.

"Pain does not originate within the abdominal organs, which are supplied only with sympathetic and the vagus nerves. All pains originate in the parietal peritoneum and subserous connective tissue structures, which are innervated by the cerebrospinal nerves. Therefore the stomach and intestines can be crushed, cut or burned without eliciting pain, but irritation of the parietal peritoneum or stretching of the parietal (mesenteric) attachments of the stomach or intestines will invariably cause pain."

Whatever may be the true cause, the clinical fact remains that some of these cases of perforation do not exhibit the profound symptoms seen in other patients and, with the diagnostic aids now at our disposal, the diagnosis must often remain in doubt.

We are told that the proper thing to do, under these circumstances, is to explore, as the patient needs an operation anyway. This course is unsatisfactory for many reasons:

1. It is not very encouraging to a patient or his family to know that the abdomen is to be opened, with four or five surgical possibilities in mind.

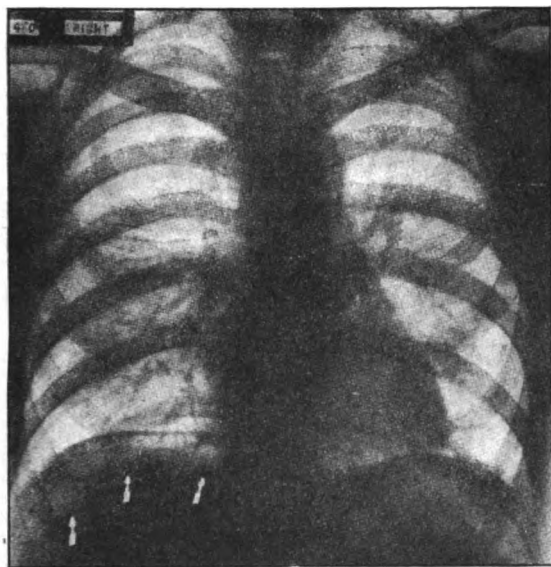
2. Perforation is surgically more urgent than many other conditions with which it might be confused. Therefore, a diagnostic certainty would often mean less delay.

3. If doubt exists between perforation and some non-surgical condition, it is important to remove this doubt at the earliest possible moment.

4. The placing of the incision, while ordinarily of no great importance, might be a vital matter in the case of an extremely ill patient.

What other aids to diagnosis have we that are independent of parietal peritoneal pain and sensitiveness?—The presence of free air in the peritoneal cavity is surely the most important.

It is safe to say that every perforation large enough to allow fluid to escape, also allows some gas to pass through. When air is free within the peritoneal cavity, in sufficient amount, it may pass between the liver and diaphragm, causing obliteration of liver dulness. X-ray examination verifies this.



Case of duodenal perforation reported by Dr. Walton Martin in *Annals of Surgery*. Arrows point to semilunar strip of lessened density above right lobe of liver, denoting free air.

There seems to be much difference of opinion regarding the occurrence and importance of this phenomenon.

Mayo Robson says: "Liver dulness is generally absent"—on the other hand,

C. L. Gibson declares that "It is a great pity that it is allowed to remain as one of the possibilities of diagnosis."

A. D. Bevan says, "You cannot wait to find free air in the peritoneal cavity obliterating liver dulness. I have never seen a perforating gastric or duodenal ulcer with that sign."

Cubbins states that "this sign is present usually in moribund cases with greatly distended abdomen and paralytic condition of the abdominal muscles."

Rutherford Morison says: "If liver dulness is present at first, and an hour or two later is discovered to have disappeared and become replaced by a tympanitic note, the sign is then one of the first-rate importance. It signifies the presence of free gas in the peritoneum, and a perforation. No other record regarding liver dulness is reliable."

It may thus be seen by the foregoing extracts that there is the greatest difference of opinion regarding the presence and significance of this phenomenon.

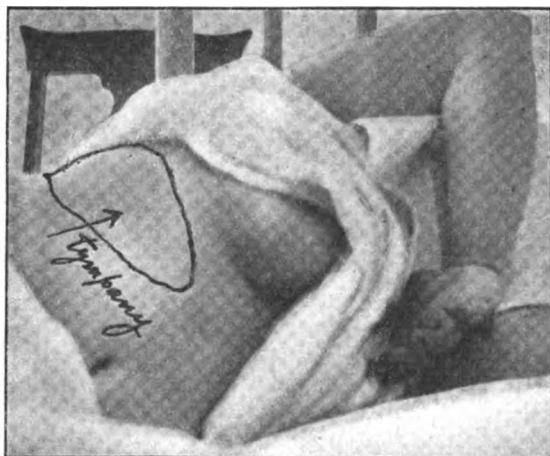
There are many reasons why much dependence has not been placed on variations in liver dulness, as these can be affected by a great many factors, both in health and disease. Liver percussion is influenced by expiration and inspiration, by lesions within the pleura and lung, conformation of chest wall, size, shape and position of the liver, tympanites, etc.

It is evident, therefore, while every one admits the great clinical significance of free air in the peritoneal cavity, that the great problem is to detect it, and not be misled by the multitude of conditions that influence liver percussion.

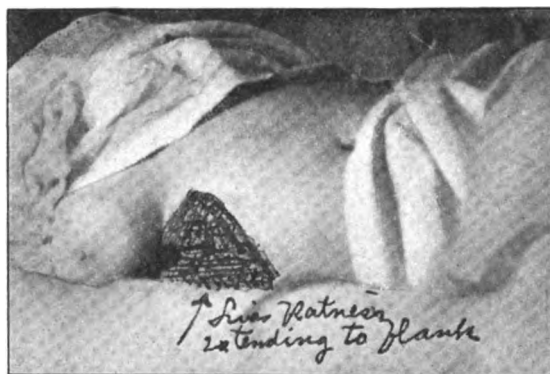
As has been stated before, x-ray examination shows that in perforation, air does collect between liver and diaphragm; abundant clinical evidence also proves that obliteration of liver dulness does occur. A previous report of mine shows that this may occur within the first few hours after perforation and with a rigid abdomen. Further study and experience have led me to the conclusion that *obliteration of liver dulness is not so much absolute as relative, and depends much on the position in which the patient is examined*; this practical point may be of the greatest value in differential diagnosis. The following interesting cases support this contention.

CASE 1. Female, age 44 years; much emaciated. Sitting on kitchen sofa when first seen. Declared that two hours previous to my visit she was seized with very severe abdominal pain, but was now feeling much better. Pulse 86, temperature 97°. Moderate tenderness over whole abdomen, more marked in the epigastrium; muscular rigidity not pronounced. Percussion over the liver in the anterior axillary and mammillary lines showed tympany throughout. This, of course, added greatly to the evidence in favor of perforation even though her symptoms were in no way typical. To be certain that no mistake had been made regarding liver tympany, the liver region was percussed again, and to my surprise, instead of getting tympany, marked flatness was obtained over the same area. At first I could not understand it, but it soon occurred to me that the difference in findings was due to the difference in the position of the patient. The examination was repeated several times, first on one side, then on the other, always with the same results. The reason, of course, was quite clear. With

the patient lying on her left side, the fluid which is always present in perforation, flowed away from the under surface of the liver to the most dependent part (left side) while the gas arose to the top, accumulating between liver and diaphragm, causing the tympany instead of liver dullness. When she was on her right side, the air became uppermost (left side) while the fluid gravitated to the under surface of right lobe of liver and Morison's pouch, thus intensifying liver dullness. The diagnosis of perforation was made and, at operation, a large gastric perforation with a considerable amount of gas and fluid was found.



Air between liver and diaphragm causing tympany, patient lying on her left side.



Liver flatness continued into the flank caused by gravitation of fluid, the air rising to the top. The patient is lying slightly on her right side.

CASE 2. Male, age 24 years. This was a typical case of perforation; the initial pain and board-like rigidity were well marked. Percussion over the liver revealed the same findings as in the previous case. Tympany over the right lobe of the liver when the patient was on his left side, and this was replaced by flatness which extended well below the 10th rib, when he was lying on his right side.

Operation disclosed duodenal perforation.

CASE 3. Male, age 44 years. This extremely interesting case was seen in consultation, patient having been ill for over three days. The attending physician stated that the onset of the trouble was sudden and accompanied by severe pain and tenderness over the entire abdomen, muscular rigidity being marked.

At the time of my visit the abdomen was quite soft, gall-bladder region excepted. There was some tenderness over both iliac fossae, but tenderness was most marked in the epigastric and right lumbar regions. The diagnosis, "gall-bladder or a high appendix," was not an unreasonable one. It seemed to me, however, that a perforation should also be considered. Liver percussion brought out the same findings as reported in the other two cases. Therefore, a definite diagnosis of perforation was made. At operation a hole in the first portion of the duodenum, large enough to admit the end of a curved half length was found and repaired.

#### SUMMARY.

1. The diagnosis of perforation of the stomach and duodenum must many times remain in doubt unless aided by some distinctive and reliable sign, independent of parietal peritoneal irritation and tension.

2. In every case of perforation, gas and fluid are present in varying amounts in the free peritoneal cavity. The gas may pass between the liver and diaphragm, as shown by the x-ray, and cause obliteration of liver dullness.

3. Much dependence cannot be placed on liver percussion as ordinarily practised, because of the very great variations, both in health and disease.

4. Change of patient's position will cause the fluid to flow to the dependent part, and the air to rise to the top. *This will intensify the findings; tympany over a wide liver area and again flatness over the same area on change of position.*

5. Normally there is a change in the liver percussion note on change of posture. This was noted in a large number of normal cases examined, but in none of these were the results similar to those found in the cases reported. Normal liver changes must be recognized before positive deductions are made. A fair comparison is the difference detected in shifting flank dullness in moderate ascites and in the normal abdomen.

6. The writer believes that this sign is of considerable value, and should be sought for in every case. If absent, in the presence of other positive signs of perforation, it may be disregarded, but if present in doubtful cases, it may be the deciding diagnostic factor.

#### DIFFERENTIATION OF STREPTOCOCCI.

By D. M. LEWIS, M.D., NEW HAVEN, CONN.,

Epidemiologist, Board of Health.

THE voluminous literature of laboratory differentiation of streptococci demonstrates that an immediate working knowledge of the various types is impossible for the epidemiologist. Should there be applicable to the field worker even a rough differentiation on the basis of morphology only, an immediate need could be

supplied. That such is the case is suggestive from my observations of the past few years.

Based on corroboration of cultures and physical examination, I have shown that, morphologically, a streptococcus gave us a working basis as an aid in the control of scarlet fever.<sup>1</sup> My experiences since that time are in accord, both in cases and suspected carriers. In isolated instances the tentative diagnosis as between scarlet fever and grippe was favored from the findings, and apparently was correct from the later course of the disease, as well as other family infections following. Its presence during convalescence in isolated instances was confirmed by confirmation of finding missed cases.

At the time I pictured a streptococcus which I stated had been found in cases of measles only. Since that time I have found the streptococcus in the examination of routine cultures and several hundred special cultures for nasal carriers (special because the cultures were from other than ordinary head cold noses), in but three instances. One was in a case first called diphtheria, then scarlet fever, but which showed the German measles rash and throat of a grippe, and who had had measles some three or four months previously. Two others were found in neighborhoods where there was measles present and where, with the isolation of and the treatment of the two, both of whom had had measles the previous season, there followed an absence of further found cases. While these cases are too small in number to be more than suggestive, its relative infrequency and the need for finding the nasal carriers of the disease before they give rise to any frequency, bespeaks for the finding a thorough trying out.

There are two other varieties of streptococci which, from a morphological viewpoint, have given me satisfactory results. With the simulation of diphtheria, where both case and nasal carrier showed a streptococcus, I followed the epidemic of grippe, with its numerous sore throats, by cultures. Extending through the year following, I have found the following: The frequent finding of a Gram-positive, medium-sized streptococcus, usually in straight chains of varying number of constituents, has led to the usual finding of chronicity of recurring sore throats, without other illnesses being found in the other members of the family previously, during or following the case. Physical examination shows an absence of the edema or the amount of general mucosal inflammation, characterizing the classes to be described. The findings in the throats simulating diphtheria, scarlet fever and measles are a Gram-positive streptococcus, generally much coarser than the ordinary type mentioned, even to forms as large as the streptococcus S described in scarlet fever. The nasal carriers in the family have given the same type. A notable finding during the past few months in the routine search for diphtheria carriers by inspection of children's nares has

been a not infrequent finding of such an organism on the first few cultures. Later, as the region of the middle turbinate is opened up after softening of the anterior crusted portion, I have been surprised to find pure cultures of diphtheria. The reverse has also happened in isolated instances. Two of the most tedious diphtheria carriers to cure, showed, after obtaining a clear passage of the anterior nares, cultures of the streptococcus. After seeing from the spinal fluid of a polio case a very different type of streptococcus, I began to watch for and investigate any such findings. Gram-positive, of a distinctly diplococcal as well as diplo-streptococcal form, I have recorded finding in conjunction with simulated diphtheria, though less than the first form mentioned. Smaller than the usual ordinary streptococcus, larger than that found in measles, it is evident in the diplo-streptococcal form. I have found it in nasal carriers, and those carriers on examination are a similar picture to a diphtheria carrier, though leading me back to premises where polio was present.

What are the limitations of such findings? None, during a consecutive period of two years. Investigation of the case or the carrier has shown that in the immediate family in both the latter types of streptococci, or in the neighborhood children of the same age, case and carrier, when they had the freedom of the neighborhood, they apparently gave rise to cases of infectious throats, laryngitis, pneumonia, malaria, impetigo, infective epidemic jaundice, glandular enlargements, as well as simulating the diseases we have mentioned and typhoid fever. A frequent strict isolation of the carriers, as well as the continued nasal treatment of all such carriers found, would seem as rational as for the carriers of so-called contagious diseases, when looked at from two standpoints: first, the demonstration of what follows in families of such carriers; secondly, what happens when we restrain and treat such carriers, not only when found in connection with family illness, but, better, as we are now doing—before we know of any family illness. This has happened: an increased school attendance and, more important, a lessened frequency of reported cases and deaths from each and the sum total of acute infectious diseases, in comparison with the seasonal and epidemic relation to other cities of the region under similar conditions. I have stated that from isolated instances I am of the opinion that the control of mumps and chickenpox lies definitely along the same lines. Limitation of time and assistance has not permitted their investigation. There has been one other limitation, which should be possible for communities with proper facilities to overcome. It is that the laboratory shall take up the subject of differentiation as already determined, in relation to not only these types which lead us to demonstrable pathological carriers and cases in

the field, but that the type or types which do not lead back to contagiousness shall be definitely placed as well. This problem is part and parcel of the control of pneumonia as well. What the field investigation of diphtheria has shown to be true in the diagnosis and control of that disease may well be reasonably true of these other diseases.

## REFERENCE.

<sup>1</sup> A Laboratory Aid in the Diagnosis of Scarlet Fever, THE BOSTON MEDICAL AND SURGICAL JOURNAL, February 1, 1917.

### Clinical Department.

#### SEVERANCE OF THE CHORDA TYMPANI NERVE.

By IRVING SOBOTKY, M.D., BOSTON.

*Otologist and Laryngologist, Long Island Hospital and Berkeley Infirmary; Aural Clinical Assistant, Massachusetts Charitable Eye and Ear Infirmary.*

THE following case has been reported because of the extreme rarity of injury to the chorda tympani nerve during a paracentesis of the tympanic membrane.

The chorda tympani nerve leaves the facial nerve near the stylo-mastoid foramen, enters the tympanum at the base of the pyramid and arches forward and across, between the handle of the malleus and the long process of the incus to an opening internal to the Glasserian fissure. It is invested by a reflection of the lining membrane of the tympanum.

From the Glasserian fissure it descends between the two pterygoid muscles behind the middle meningeal artery and in close relation to the auriculo-temporal and inferior dental nerves and blends with the lingual branch of the inferior maxillary nerve.

The chorda tympani nerve has no control over the muscles of the tongue, but excites sensations of pain and taste, perceived chiefly at the side and the anterior two-thirds of the tongue. It also provokes secretion from the sub-maxillary, and in less amount from the parotid gland, according to animal experimentation.

Schulte, in 1885, reported a case of severance of the chorda tympani nerve during the removal of a polyp from the left middle ear with a sharp curette. A loss of feeling and taste of two-thirds of the tongue followed.

Wolf, in 1890, reported a case of injury to the chorda tympani nerve in a man, as a result of a paracentesis. Immediately after the incision the patient said he experienced a peculiar sensation, or rather, absence of sensation upon the left side of the tongue. The next day he declared that everything he ate was apparently without salt, and whatever came in contact with this particular side of the tongue tasted the same.

The writer's case was seen at the Massachusetts Charitable Eye and Ear Infirmary.

E. F., age 66. June 6, 1917.

*Diagnosis.*—Right otitis media, acute.

The usual paracentesis was done. She was seen again on June 8. There was a moderate discharge from the right ear, and upon wiping away the pus the paracentesis opening was seen. It was wide and a bit anterior. She complained of inability to taste and of a numb feeling over the right side of her tongue. A probe examination showed insensibility to touch. An otoscopic examination of the left tympanum showed a thin membrane, and the chorda tympani nerve as a faint line situated lower than normal. It is fair to assume that the nerve on the right was also lower than normal. This accounts for the injury.

The patient was then referred to the Nerve Department of the Massachusetts General Hospital. Dr. J. B. Ayer reported that tests with solutions showed no taste in anterior one-half to two-thirds of the tongue on the right, except, possibly, at the very tip. Taste was present on the right posterior one-third.

### Society Report.

#### THE NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.

A CLINICAL session of the Society was held on Wednesday, Oct. 10, 1917, in Boston. The following cases were shown and discussed:

##### 1. SCLERODERMA.

Presented by DR. CUMMINS.

Female, age 18. Duration, two years. Started as a small "pimple" on right cheek and remained as such until four months ago, when process began to spread, and has gradually increased in size, and today area extends from just below eye to about one inch above ramus of jaw, and involves half the cheek. Central portion is finely scaling, and the edge shows typical violaceous color. The whole area is very firm to touch.

Patient first seen in clinic Oct. 6, 1917. Has received no treatment as yet. X-ray therapy suggested.

Dr. Towle said that the whole process suggested the action of some low-grade parasitic organism, and asked Dr. Cummins to take a culture or remove a piece of tissue at patient's next visit.

##### 2. DIAGNOSIS (?).

Presented by DR. BLAISDELL.

An Italian male cook, 34 years of age, presents a very striking cutaneous eruption of three months' duration. The scalp, face, neck, and the upper trunk are affected. The patient states that process started on the scalp and at first spread slowly, but during the last three or four weeks the progress has been distinctly more rapid. The primary lesion seems to be a pea-sized, sharply bounded, maculopapule covered with a distinctly moist, yellow crust.

The striking feature of the eruption is the disposition of the lesions, which on the forehead make a continuous line like two joined, inverted "Vs," while elsewhere the distribution is circular, as one so often sees. In these circular areas there is no sign in the center that the disease has ever been present, for the skin is normal in all respects, show-

ing even no color-change at present. Apart from these striking, geographic figures, there are scattered lesions of irregular shape, but of the same inflammatory type.

The superficial nature of this whole process is noteworthy, and under the microscope there is nothing to be seen in the corium but the usual inflammatory changes about the superficial vessels and follicles. The rete, however, is edematous; the nuclei are pressed up against the walls of the cells, leaving vacuoles in their places, and the layer as a whole practically refuses to take the basic stains. Examining the scrapings in KOH, under the microscope, there is revealed a definite mycelial growth, which Dr. Rowland Thaxter of Cambridge pronounces an oidium.

The cultures made from these scrapings are positive, and present, on microscopic examination, the same organism just described. This case is certainly most unusual and is still under study.

### 3. FIBRO-SARCOMA.

Presented by Dr. BLAISDELL.

Female, age 13. Patient first seen in clinic last July. Duration, several years. Process began on left upper arm. Now shows twenty to thirty lesions, most of which are pinpoint, pigmented spots. Many of them are infiltrated and the largest one is bean-sized. Two minute lesions on right arm.

Patient was admitted to Ward G in September, and Dr. Burns excised the large fibromata. The smaller ones have not been treated as yet.

*Pathological Report.*—Microscopic examination shows a tiny tumor infiltrating through corium, which is composed of undifferentiated spindle cells. There are occasional mitotic figures.

### 4. PRURIGO.

Presented by Dr. CUMMINS.

Female, age 21. The disease has existed since early childhood. Face, arms, legs and trunk involved. Skin infiltrated, pink red, excoriated and papular. Marked pruritus complained of.

Child undeveloped. Disorders of menstruation. Several Wassermanns taken while in Ward G last year. Wassermanns vary from negative to moderately positive. Thyroid enlarged, fine tremor of hands, tendency to hyperhidrosis. Condition improved under KI. and ovarian extract.

Patient did not carry out treatment prescribed during the summer, and she returned to clinic two days ago with an acute exacerbation of process and was readmitted to Ward G.

### 5. PRURIGO.

Presented by Dr. CUMMINS.

Female, age 14.

Has had the cutaneous outbreak since early childhood. Face and arms involved. Patient has been under treatment at the clinic for five months. When first seen in clinic, skin was markedly infiltrated, excoriated, pruritic and papular. Process always worse in summer. Has been in the ward for study.

Patient reacted to proteins and Dr. Turnbull is giving her injections of meat extracts at weekly intervals. She has shown a marked improvement. Skin is only slightly infiltrated, pruritus is diminished, and there is no papulation.

### 6. DERMATITIS EXFOLIATIVA.

Presented by Dr. BLAISDELL.

Female, age 49.

Patient was born in Massachusetts and has always lived in this State. August 1, 1917, was admitted to Ward G.

Onset about nineteen months ago, beginning as an erythematous scaling patch on palm of left hand. Process soon spread to feet and rapidly involved the entire body. Since onset there have been series of eruptions of four to five weeks' duration, during which time the entire body is in a scaling condition, clearing up for three to seven days and then relapsing. Attacks of scaling are ushered in by severe headache, watering of the eyes, severe chill running from a few days to a week; nausea and malaise.

During periods of scaling, the entire body is involved, including the scalp, the hands and feet showing smaller but coarser scaling. There is also a darkening and shedding of the finger and toe nails. The feet have been covered with thick, yellowish crusts. Both hands and feet are edematous, the motion being markedly limited. At times the itching is intense, the entire body being hot and tense. At times the body has a sense of rawness. After an indefinite course, the scaling ceases, the skin becomes softer and is erythematous and presents yellowish pigmentation.

When first admitted to house, was given starch baths and Fowler's solution. Patient placed on the D.L. the first two weeks of September. Is now having powder treatment, and is showing slow but steady improvement.

### 7. DERMATITIS EXFOLIATIVA.

Presented by Dr. BLAISDELL.

Male, age 62. Patient has been in the house since August. (Note made at time of admission.)

Duration, six months. The process is practically universal, the back, chest and abdomen being least involved. For three years has had a chronic psoriasis of arms and knees. Last April the skin became red and irritated, and in spite of using "unguine" and "poslam" the present trouble resulted. Arms and legs are swollen, red, and covered with thin scaling. The scalp presents fine, branny, dry scaling. Skin in general is dry, rather coarse, and of a reddish-brown color, being more pigmented in areas, notably the extremities.

The scaling is practically universal, being rather fine, dry, and branny over the face, neck, upper arms, trunk and thighs. The forearms and hands are more markedly involved, the scales being larger, thicker, and slightly greasy in character. The extensor surface of the legs presents scaling of an almost crusting nature, which is brownish yellow in color and quite adherent. The palms and soles are somewhat thickened. The dorsum of the feet is somewhat edematous. Itching is very troublesome.

Patient has much difficulty in keeping warm, but otherwise is fairly comfortable. During stay in house has been under powder treatment and has shown slow but steady improvement.

### 8. KERATOSIS FOLLICULARIS.

Presented by Dr. BLAISDELL.

Female. Patient was seen by Dr. James C. White in 1889, who made a diagnosis of keratosis follicularis. Father similarly affected.



Patient first noticed eruption when five years old, at time of vaccination. States that the skin of face gradually became darker and rougher and thicker, and her mother used to scrub her to try to get it clean. During childhood process was limited to face, but started to spread when she was eighteen years old, and now involves the face, ears, scalp, neck, sternum, back, left thigh, and plantar surfaces of feet. Lesions are more marked on face. There, there is much thickening of the sebaceous follicles, considerable hyperpigmentation and roughening. The back, between the scapulae, shows similar lesions in the early stages of development.

Patient says process itches and tingles if she gets excited, and when she becomes heated blister-like lesions form under the skin. Cold weather does not affect her, but says she feels the heat more than other people.

Disease slowly progressive; no epithelial degeneration.

#### 9. MYCOSIS FUNGOIDES (?)

Presented by DR. BLAISDELL.

Female. Process started twenty-two years ago on face, and cleared up in six months. Since then has had occasional attacks lasting several months, for years. As she became older she began to have attacks every two or three months, lasting three to six weeks, being bedridden at times. Up to one year ago process was confined to face, but since then there has been universal involvement. There have been no remissions during the past year. Itching is very severe.

The hair is largely gone, the eyebrows are wholly gone, and the disease involves the whole of these areas completely. There is great infiltration. The body is covered with excoriated papules. Lesions are circular in outline and well demarcated. They are dusky red in color, for the most part with some yellow scaling, and the periphery is of a brighter red color.

The loss of hair in the scalp and the somewhat papillomatous ulcerations over the temples make one think of a possible premycosis condition.

Biopsy taken. No report as yet.

X-ray. Wash 2.

### Book Reviews.

*Occupational Therapy.* By GEORGE EDWARD BARTON, A.I.A. Director of Consolation House. New York: Lakeside Publishing Company.

In this small volume of ninety pages the author has gathered together various addresses which he has made and articles which he has written on the general subject of occupational therapy. Their titles are: A View of Invalid Occupation, Occupational Therapy, Occupational Nursing, Occupational Therapy and the War, Occupation and Auto-Inoculation in Tuberculosis, and the Movies and the Microscope, last being a discussion and explanation of the Simultaneous Cycle Motion Charts used to study methods of efficiency in manufacturing establish-

ments, by means of taking moving pictures of operators at work. Mr. Barton is a firm believer in the necessity of bridging the chasm between the time that a patient is discharged from a hospital and the time that he is in fit condition to return to his employment. In this interim comes a period of idleness and discouragement and corresponding delay in return to complete health that must be reckoned with by healers of the sick, if they are to perform their greatest service to humanity, and it is here that properly supervised occupation becomes efficacious. The author writes in a simple, conversational style, easily read and appreciated.

*Ligations and Amputations.* By A. BROCA, Professeur d'Opérations et Appareil à la Faculté de Médecine de Paris. Translated by ERNEST WARD, M.A., M.D., F.R.C.S. With 510 illustrations. New York: William Wood & Company. 1917.

A small volume of about 300 pages presenting what Prof. Broca considers still essential in teaching the technique of literature of arteries and amputation of limbs.

Mr. Ward mentions the fact that he has "simply translated the book as it is written, without any editing or footnotes."

While Prof. Broca in his preface acknowledges his very great indebtedness to Farabeuf, saying that he does not consider the present small volume an original work and suggesting that it is really his own abridgment, with, perhaps, modifications from his own experience of Farabeuf's teachings, he writes that he believes, while classical amputations may have been over-taught years ago, that some of the essential principles are now actually forgotten; and that today there are proportionately more poor stumps than there were years ago. Most of the drawings, which are excellent in simplicity and distinctness, are taken from Farabeuf.

In these days, in which we hear so much of the general question of amputation in relation to war surgery, a small manual of this sort is of distinct interest and value, particularly as it comes to us from France and contains information gathered by Broca in his experience in the present war.

*Gynecology.*—The Practical Medicine Series—1917. Edited by EMILIUS C. DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and SYDNEY S. SCHOCHET, M.D., Instructor in Gynecology, Northwestern University Medical School; Adjunct Gynecologist, Wesley Hospital, Chicago. Chicago: The Year Book Publishers. 1917.



This useful little abstract of gynecological literature appears in its usual form. Naturally, there is even greater lack of foreign literature than a year ago. The sub-title is somewhat misleading—"comprising . . . volumes on the year's progress." There is much in each year's product that does not represent progress in gynecology. It may indicate progress on the part of the author, showing that he is in the way of learning something; but that is all. Thus, in addition to literature that shows progress, there are abstracted articles which might better be catalogued by title alone. However, as the method adopted in this volume indicates also what not to read, it renders a valuable service.

*Handbook of Gynecology*, for students and practitioners. By HENRY FOSTER LEWIS, A.B., M.D., Professor and Head of Department of Obstetrics and Gynecology in Loyola University School of Medicine; Chief of Obstetric Staff of Cook County Hospital; Fellow and ex-President of the Chicago Gynecological Society; late assistant Professor of Obstetrics and Gynecology in Rush Medical College (in affiliation with the University of Chicago) and ALFRED DE ROULET, B.Sc., M.S., M.D., Professor of Gynecology in Loyola University School of Medicine; Attending Gynecologist to the House of the Good Shepherd, and to St. Bernard's Hospital; Obstetrician and Chief of Staff of St. Margaret's Home and Hospital. With 117 illustrations. St. Louis: C. V. Mosby Company. 1917.

A new book is always looked into with interest. Does it contain new ideas? Perhaps this is too much to expect of a textbook, a "handbook" as this is called. Doubtless the size of a handbook depends on the size of the hand: Veit's *Handbuch* is in seven volumes. This book by Lewis and deRoulet is designed chiefly for the medical student, not for the specialist, and, regarding gynecology from the point of view of the student as a minor subject, consists of one small volume.

The classification follows "the lines of pathology as much as present knowledge will permit." By this is meant that lesions of one apparent kind are treated under one heading: for example, all cysts of the genital system are discussed in one chapter. This classification has only a certain informational advantage and takes away emphasis from a more important point of view.

Even in a new book it is difficult to escape from the past, and occasional bonds are visible. The chapters on Asepsis in Gynecology, Care of Patients before and after Operation, and Anesthesia might well be omitted, not because they are unimportant, but because the student should

receive formal instruction in asepsis; for example, once for all in the course in surgical technic, and in anesthesia in its appropriate place, which is not in the specialty of gynecology.

Too much emphasis is laid on the view which regards prolapse of the uterus as a hernia. The analogy is not as exact as the authors would have the student believe. It is helpful to consider the likeness to a hernia, but more helpful to consider the unlikeness. Part of the cervix of the uterus is actually a part of the pelvic floor.

The book, however, aims to "supply the knowledge of principles." This it does, for the most part clearly and succinctly and with excellent judgment. The illustrations are clear and the selection good.

*The Principles of Gynecology*, for students and Practitioners of Medicine. By W. BLAIR BELL, B.S., M.D., Lond., Gynecological Surgeon, Royal Infirmary, Liverpool; Lecturer and Examiner in Clinical Gynecology in the University of Liverpool. Second edition. New York: William Wood & Company. 1917.

This second edition contains few changes from the first of seven years ago, chiefly because of the difficulty experienced by the author in finding time in this period of stress for a thorough revision.

The arrangement of the subject-matter is unusual though not new with this work. For example, malformations of the whole genital system are considered in one chapter, injuries of all parts of the system in another, infective and parasitic diseases in a third, benign neoplasms in a fourth, and so on. This method is characterized as the most "scientific." But at present no method of classification is best adapted for all conditions. "Scientific" should mean, based on the principle of cause and effect. Thus all forms of infection of the genital system caused by the gonococcus might well be considered in one chapter. But no especial illumination is thrown on malignant growths by presenting cancer of the vulva, of the cervix and of the ovary consecutively. That is, in the present state of our knowledge, a scientific classification of tumors is not possible; and it is a convenience, from the clinical point of view, in the presence of some obvious pathological condition of the cervix, for example, to consider the various possible diseases of the cervix which this particular condition may be.

The vigorous style of the author is characteristic, and the fundamental principles of gynecological science and practice are stated concisely and clearly.

*Diseases of Women*. By HARRY STURGEON CROSSEN, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School,

and Associate Gynecologist to the Barnes Hospital; Gynecologist to St. Luke's Hospital, Missouri Baptist Sanitarium and St. Louis Mullanphy Hospital. Fourth edition, revised and enlarged, with eight hundred engravings. St. Louis: C. V. Mosby Company. 1917.

This deservedly popular book now appears in its fourth edition. The changes are not numerous nor are they radical, but they are in the way of improvement. A few microphotographs have been included and a new chapter has been added on the endocrin glands. There is still, however, too much space devoted to operations for a work of its avowed limited scope. The press work shows a distinct improvement and will increase its already well recognized usefulness.

*Surgical Contributions.* From 1881-1916. By RUTHERFORD MORISON, M.B., F.R.C.S., Edin., F. R. C. S., England. Consulting Surgeon Royal Victoria Infirmary, Newcastle-on-Tyne; Professor of Surgery, Durham University; Examiner in Surgery, Liverpool University. Volume I, General Surgery; Volume II, Abdominal Surgery. New York: William Wood & Company. 1916.

These two volumes are not described as "text-books," and yet, considered as examples of surgical practice, and as frank commentaries and criticisms of surgical procedures, they may well be considered textbooks of modern surgeons. Mr. Morison has been most frank in relating his own mistakes, and is equally determined in maintaining his own opinions. He in reality presents a history of surgery since 1881, as developed in the best English school. He begins with the Lister dressing and the carbolic spray, which he learned from Sir Joseph himself; and even in 1916 he is evidently still a believer in antisepsis.

These two books contain case histories, lectures, discussions, observations, suggestions and end results in really enormous numbers; everywhere is brevity, directness and simplicity. As might be expected, he describes many unusual cases: enormous calculi, one weighing one pound and six ounces; another, quarter of a pound; enormous tumors, splenectomies, gastrectomies and hysterectomies, when these operations were rare. Consideration of his fatal cases is given more than once; and parallel to his original papers are comments made by him now in 1916, with the same frankness that his early writings possess.

The so-called Talma-Morison operation he devised, executed and reported years before he

had heard of Prof. Talma's proceedings; his technic differs somewhat from that usually followed in the United States.

The reviewer warmly recommends the volumes to the surgeons of America. In every way, they repay the attentive reader.

*Three Clinical Studies in Tuberculous Predisposition.* By W. C. RIVERS, M.C.R.S., D.P.H. London: George Allen and Unwin, Limited.

This book consists of 272 pages, with numerous illustrations and an elaborate protocol, giving the details of 500 cases, by which the author endeavors to show that ichthyosis, squint and nasal abnormalities are predisposing factors toward the development of tuberculosis.

Concerning the first of these conditions, ichthyosis, he believes that the "incidence of ichthyosis may entail liability to consumption," and that "ichthyosis may be regarded as a sign of predisposition to consumption."

In regard to squint, he states that "squint probably merely indicates in certain instances the presence of predisposition to tubercle—clinical pulmonary tubercle—without itself forming an active constituent of a phthisical diathesis. Such active constituent may be some associated malformation, of which squint is the stigma."

The greater part of the book is devoted to a consideration of the relationship of consumption to nasal abnormality. From a study of the literature bearing on this subject, he concludes that, "every writer, save one, either maintaining or being impressed with the likelihood that non-tuberculous, intranasal abnormality is a fairly common predisposing cause of tuberculosis." In discussing this subject he calls attention to the apical collapse induration, which is well known to be associated with certain nasal abnormalities.

The writer's general argument, *i.e.*, that any disease which tends to reduce the resistance and the nutritive processes of the human body, and any disease which tends to interfere with the respiratory processes, may be a predisposing factor in consumption, is a perfectly sound one. Any one, however, might with just as good reason as the present writer, select three entirely separate conditions and make a careful study of the cases of tuberculosis which occur coincident with such conditions, and come to the same clinically sound conclusions as does the author of this book. The reviewer, therefore, while admiring the careful study of the literature, and the painstaking detail with which the author has taken up the subject of ichthyosis, squint and nasal abnormality as related to tuberculosis, is quite unwilling to believe that any one of these conditions renders the person more prone to tuberculosis than innumerable others that might be mentioned.

## THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, FEBRUARY 14, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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## WAR NEPHRITIS.

THE *British Medical Journal* has drawn attention to a certain lack of probability in the view that war nephritis is a new form of kidney disease, or even a modified form of disease previously known. The whole question of causation is, indeed, difficult; and not a few experienced observers are coming to the view that war conditions have simply obscured the pathology of nephritis without adding a positively new element. What these controlling conditions are is not fully established, but it is evident that they are closely associated with the conditions which produce a high blood pressure and a cardio-respiratory complex, with inadequate or inferior food, with excess of protein in the diet, with the occupations of soldiers in the trenches, and with the general circumstances of exposure, overcrowding in billets, and fatigue, or *surmenage*, as the French call it. In fact, the French physicians, for example, Boulanger in the *Paris Médicale* lately, find the etiology in this general state of affairs, which must be

borne in mind as always lying in the background, before we seize exclusively upon some unknown micro-organism as the beginning and end of the problem. They seem content with this natural explanation, and define war nephritis as only a manifestation of congestion *a frigore*.

In connection with the theory of a toxic or microbic origin, it is significant that animal experiments—the inoculation of guinea pigs with carefully drawn specimens of urine—have proved negative. An ultramicroscopic organism might disclose itself in this way. On the other hand, such an organism would probably produce characteristic lesions in the kidney. The most recent knowledge on this point, in the paper of Captain J. Shaw Dunn and Colonel J. W. McNee, in the *British Medical Journal* of December 8, 1917, certainly renders this view highly probable. Their plates show that in soldiers who have died in the acute stages of war nephritis, the lesions in the kidney are limited to the capillary blood vessels of the glomeruli. These lesions have many appearances of novelty, and, so far as they may be judged in this way, are evidences of the invasion of the kidney by bacteria or their toxins.

One difficulty in accepting this view has not been noted. It does not account for the incidence of the disease. Dunn and McNee observed most of the cases in the infantry; cavalrymen and artillery men are affected less often, while officers seldom have war nephritis. They note, also, that the disease does not occur in the same ratio in the civilian population of the same area. How are these facts to be reconciled with the germ theory? It seems to be still further weakened by the statement that war nephritis is not due to exposure to variations of temperature. Season and climate, it is said, exert no appreciable influence. This idea is evidently wholly at variance with the view of French and Italian observers, that the principal factors are environmental. If this type of nephritis is really due to infection, it would seem more natural to believe that cold and bacteria were jointly responsible.

Whatever may be the cause, the problem of war nephritis has some extraordinary ramifications which suggest infection. It begins suddenly with dyspnea, and the pulse and temperature curve recall pneumonia. In fact, the diagnosis of pneumonia has been made erroneously in cases that turned out to be war nephritis. Moreover, there is some relation be-

tween it and youth. It appears to attack young soldiers especially. It is curious that older men with some arterial changes, and even a history of renal disease, occupy a relatively favorable position. These facts, if fully established, indicate a relation between war nephritis and orthostatic albuminuria, and in both recovery and disappearance of albumin follow rest and proper diet.

Lastly, the respiratory symptoms naturally suggested, besides infection, poisoning by asphyxiating and other gases. The fact that the peculiar disabilities of trench nephritis are more widely distributed through the infantry and the rank and file, seems to lend an air of great probability to this supposition. But there is another side to the toxic theory which has not been noticed. One of its features, which has not received sufficient attention, is the effects of a series of vaccinations. Bacteriologists are alive to the possibilities of anaphylaxis, and it is not too much to say that war nephritis may be a manifestation of this kind. A Russian pathologist, Stefanski (*Russki Wratsch*, 1917, p. 89), has adduced a number of instances of albuminuria after antityphoid and antistreptococcic inoculations. The whole question cannot be discussed here, but it is reasonable to suppose that the frequency and variety of modern vaccination among troops might subject the kidneys and the circulation to a considerable strain. There is nothing surprising to the bacteriologists and worker in animal inoculation in this aspect of the case. The results of animal experiments show that, if an injection of antityphoid, anti-cholera, or anti-dysenteric vaccine is repeated after a short interval, the phenomena of anaphylaxis appear. It may be inferred, according to Kraus and Doerr, that the kidneys in man will react in the same manner, though not, perhaps, in the same degree. We do not suggest that a substantial proportion of cases of war nephritis are due to vaccination, but the question of its origin cannot be answered relevantly without an examination of all the facts.

#### REPORTS OF HOSPITALS FOR THE INSANE.

LOOKING over a number of reports of state hospitals for the insane, the mind is bewildered by

the immense variety of these documents. Here we have a report which sounds like the business statement of a modern farm; there we have a collection of psychological documents; and in another place we feel as if we were having a chat with a gentleman showing us over his establishment. One report will give the number of manic-depressives admitted during the year as sixty per cent., another will give fifteen per cent., and still another two per cent. Many other discrepancies might be pointed out, but these are sufficient for exemplification. For the earnest student of psycho-pathology such a state of affairs is puzzling and exasperating; the modern superintendent of an insane hospital, who wishes to obtain a broad view of the condition of the insane in the various other hospitals in other states, is baffled.

There is a reason and a remedy. The reason is, that state hospitals for the insane are dependent upon an annual appropriation, whose disbursement is scrutinized closely, and the superintendent is expected to eke out his finances by developing to the utmost his natural resources; every acre of land must be farmed or made into pasture. It is of more moment to the board of directors that enough meat was raised during the year than that the recovery rate of dementia precox is falling. The hospital superintendent must be a good executive and business man first, then a good psychiatrist if he has time. Nor can the obvious remedy be applied—to put the administrative affairs of the hospital under one head, and the medical under another. Wherever such a scheme has been tried it has come to grief.

What, then, is the remedy? We want, first of all, a medical head for such a hospital who has the ultimate disposal of all administrative affairs. Under him should be two distinct branches, the administrative and the medical. The former, divided into many parts, should be under the head of a good business man, whose duty it is to develop the resources of the hospital to the utmost, but never at the cost of injury to the patients' welfare, and always subject to the approval of the medical superintendent.

Each hospital should be required to publish two distinct reports, one by the steward and the other by the medical staff. The medical report should be really illuminating. It should give information about the admissions of the year, comparing them with previous years. It

should abstract the original work done during the year by the members of the staff; it might even publish one paper by each member, if the staff is not too large. Cases should be classified according to a uniform standard, say the one adopted by the American Medico-Psychological Association. Any rare neurological or psychiatric cases observed during the year should be noted, so that a psychiatrist studying a particular subject would know where to apply for records of apposite cases.

In short, the annual report of the modern hospital for the insane should be a real aid to the study of psychiatry. It should report the progress made by that hospital during the year; and the student of psychiatry, having before him the annual reports from all the states, would then be able to get a bird's eye view of the year's progress in caring for the mentally ill; he would be able to realize, with some accuracy, whether such a disease as dementia precox is really on the increase or not, and not be confused by administrative data of economic importance rather than psychiatric relevancy.

#### THE VENEREAL DISEASE PROGRAM IN MASSACHUSETTS.

IN another column of this issue of the JOURNAL is published the fourth and last of a series of special articles on the venereal disease program in Massachusetts. The first of these, on "Venereal Disease Reporting," by Dr. Eugene R. Kelley, chief of the Division of Communicable Diseases of the State Department of Health, was published in the JOURNAL on January 17 and received editorial comment in the same issue. The second, published in the issue of January 31, was by Dr. Merrill E. Champion, and dealt with the aspect of the problem involved in measures for the extension of facilities for diagnosis and early treatment; and the third, by Dr. Kelley, published on February 7, dealt with repressive measures. The present and concluding instalment, by Dr. Lyman A. Jones, director of the Division of Hygiene of the State Department of Health, is concerned with the educational aspects of the subject.

Much has recently been written concerning the problem of venereal diseases among armies in camp and in the field; but in the last analysis the solution, or rather abolition, of this problem, rests upon the more fundamental one of condi-

tions existing in the civil community. As in the case of alcoholism, it is primarily through the medium of widely diffused popular education that evils of this sort can most effectively be reached and combated.

In connection with Dr. Jones's contribution and the second paper by Dr. Kelley, attention may be drawn to a bill (House No. 213) accompanying the recommendations of the State Department of Health, now pending before the Massachusetts General Court. This act, relative to the sale and distribution of certain drugs, is aimed primarily at the surreptitious drug-store treatment of venereal diseases, and may be regarded as an attempt to secure for the public the most effective possible treatment for this group of ailments. The text of the bill is as follows:

"Section 1. It shall be unlawful for any person, firm, or corporation to sell, furnish, give away or deliver any drugs, medicines or other substances to be used for the cure or alleviation of gonorrhea, syphilis, or other venereal disease, except upon the written order of a manufacturer or jobber in drugs, wholesale druggist, registered pharmacist actively engaged in business as such, physician registered under the laws of this Commonwealth, or an incorporated hospital through its superintendent or official in immediate charge, or upon the written prescription of a physician registered under the laws of this Commonwealth, bearing his legal signature and his office address.

The prescription when filled shall show the date of filling and the legal signature of the person filling it, written across the face of the prescription, and shall be retained on file by the druggist filling it for a period of at least two years. No order or prescription shall be received for filling or filled more than fourteen days after its date of issue, as indicated thereon.

The prescription shall not again be filled, nor shall a copy of the same be made except for the purpose of record by the pharmacist filling the same, and it shall at all times be open to inspection by the officers of the state department of health, the board of registration in pharmacy, the board of registration in medicine, and the authorized agents of said department and boards.

Section 2. Any person who for the purpose of evading or assisting in the evasion of any provision of the act shall falsely represent that he is a manufacturer or a jobber in drugs,

wholesale druggist, registered pharmacist or registered physician or superintendent or other official immediately in charge of any incorporated hospital, or who, not being a registered physician, makes or alters a prescription or written order for any drug, medicines or other substances to be used for the cure or alleviation of gonorrhea or syphilis or other venereal diseases, or knowingly issues or utters a prescription or written order falsely made or altered, shall be deemed guilty of violation of this act."

Section 3 provides that any violation of this act shall be punishable by a fine of not less than \$5.00 for a first offense, not less than \$100 for a second offense, and by fine and imprisonment for not less than thirty nor more than ninety days for any subsequent offense.

The passage of this commendable act is earnestly to be desired and advocated by the medical profession.

### MEDICAL NOTES.

**MENINGITIS IN SOUTH CAROLINA.**—In an effort to check the epidemic of spinal meningitis in Columbia, S. C., the health department has ordered the closing of public schools, churches, motion picture theatres, and other public gathering places. Sixteen cases of the disease have been reported.

**HEALTH OF BELFAST.**—Among the Irish notes in the *British Medical Journal*, recently appeared the following item with reference to the public health of the city of Belfast:

"At a meeting of the Belfast city council, held on January 2, it was reported that during 1917 there were registered 6541 deaths, as compared with 6496 in the preceding year. The death rate, calculated (apparently) upon a population of 394,000, was 16.6 per 1000, which is the lowest on record, the figure for 1916 being 16.7. The zymotic death rate was 1.1 (414 deaths), and was also the lowest on record, the rate being 1.7 (650 deaths) in 1916. The disappointing features of the health of Belfast last year were: (1) that the deaths from typhoid fever (though they only totalled 41 out of 277 notifications) are more numerous than they have been since 1908; (2) that the infantile mortality rate has risen to 128 per 1000 births, as compared with 113 in the previous year; and (3), worst of all, the high tuberculosis

mortality rate. There were 929 deaths from pulmonary tuberculosis, giving a rate of 2.4, while, in 1916, the deaths were 830, with a rate of 2.1. This means that 99 more people died of pulmonary tuberculosis in 1917 than in 1916, and since 1906 it is the highest number recorded. If the explanation given, i.e., that this high Belfast pulmonary tuberculosis rate is due to the number of soldiers who, on being discharged from the army, came home to die of consumption, be true, it conveys a grave impeachment of the efficiency of medical examination for the army, and it is really hard to believe that almost a hundred discharged soldiers should have actually died of pulmonary tuberculosis in 1917 in Belfast. During the last two years the Belfast Corporation have expended something like £70,000 in working a tuberculosis scheme, with the result, as a member of the City Corporation pointed out at the meeting on January 2, that there is a largely increased tuberculosis death rate. Apparently, tuberculosis is not to be got rid of as easily as was thought, at least, by domiciliary and sanatorium treatment."

**AMERICAN COOKED FOOD SERVICE.**—That new social conditions are arising out of the food and labor situation, is shown by the response of the public to the new food service plan being established to deliver cooked meals to homes.

The demand for this service comes from the better class of apartment houses and separate homes on the upper West Side (New York City), within motor radius of the first station at 213 West 79th street, but the founders are making every endeavor to place the low-priced service within the reach of the industrial population.

The men and women who have interested themselves in the American Cooked Food Service are more than gratified by its results. Included on the Board of Directors are Miss Jessie H. Bancroft, president; Mr. Adolf Lewisohn, vice-president; Dr. Belle J. Macdonald, treasurer; Mrs. William G. Shailer, secretary; Mrs. Herbert L. Satterlee, Mrs. Egerton L. Winthrop, Jr.

The demand for this service has been such that two weeks before its opening day (February 1) the first station was registered almost to its full capacity of 500 persons per day.

Other stations are in contemplation, so that all parts of the city may have hot, well-balanced

meals, fulfilling all the requirements of the Food Dictator and endorsed by him, delivered to the homes.

**PREVENTION OF VENEREAL DISEASE IN NEW YORK.**—The Department of Health, in its efforts to control the spread of venereal disease, sends out the following notice:

Despite frequent explanation of the Health Department's attitude with respect to venereal diseases, a large number of physicians still misrepresent the work of the venereal clinics, and voice their antagonism to what they allege is the Department's unwarranted treatment of venereally infected individuals who are well able to pay for treatment.

Let us therefore repeat, the so-called "venereal clinics" conducted by the Department of Health *do not treat* patients. In response to announcements posted by the Department of Health in the toilets of saloons, ferry houses, and railway stations, persons having venereal disease come to the Department's clinics for confidential advice. They meet the "medical adviser," who goes into the history of the case, examines the patient, takes blood specimens for serum test and smears for microscopical examination, explains the nature of the disease, its mode of spread, and the necessity for prompt and proper treatment by a competent physician. The patient is warned against self-medication, treatment by druggists and by advertising "specialists." He is told to consult and trust his private physician, or, if obviously unable to pay a private physician, he is referred to one of the recognized dispensaries for treatment.

Under no circumstances is the patient treated by the medical adviser, and every effort is made to have the patient place himself under the care of his family physician. In accordance with the law, every patient applying at the clinic receives a pamphlet of instructions regarding the nature of venereal disease, mode of transmission, precautions to be taken, necessity of prompt and adequate treatment, importance of laboratory tests in determining infection, and cure, etc.

**DIAGNOSTIC FACILITIES AT THE DISPOSAL OF PHYSICIANS.**—Physicians are urged to make greater use of the diagnostic service offered to them by the Department of Health of New York City. These include serum tests for the Wassermann reaction in syphilis, complement-fixation tests for gonococcus

infection and the microscopical examination of pus and other discharges. In order to assist in the diagnosis of doubtful cases, the Division of Venereal Diseases is prepared to make and examine by dark field illumination, microscopical smear preparations from cases of suspected syphilis. Physicians who choose to refer patients who are unable to pay fees of private laboratories, should furnish them with a letter explaining the nature of the service desired and direct the patients to "The Medical Adviser," Room 207, 139 Centre Street, Manhattan, hours from 9 to 11.30 a. m. daily. A prompt report of the adviser's findings will be sent to the attending physician referring the patient.

**COÖPERATION WITH AMERICAN PUBLIC HEALTH ASSOCIATION.**—At the recent meeting of the Association of Life Insurance Presidents, held in New York City, the following resolutions were adopted:

*Whereas*, The improvement in public sanitation through the efforts of local health boards is one of the most important and valuable results achieved in the field of preventive medicine; and the life insurance companies should be and are peculiarly interested in the progress and success of all movements which tend to prolong the term of human life; and

*Whereas*, The American Public Health Association is engaged in the work of promoting the enactment and enforcement of more scientific and effective health laws, and of giving expert advice upon methods of health board organization and health law administration; now therefore be it

*Resolved*, That the life insurance companies of the United States are earnestly recommended to become members of the American Public Health Association, and that their representatives be encouraged to give personal aid to all efforts intended to improve local sanitary conditions.

**CAMPAIGN FOR NEW MEMBERS OF TUBERCULOSIS ASSOCIATION.**—"The Executive Committee of the National Tuberculosis Association has announced a campaign for 5000 new members. This drive was launched on February 4, 1918, and will continue until March 11.

The reasons that have influenced the National Association to start the campaign at this time may be briefly summarized as follows:

First. The membership of the National Association at the present time is only about



2500. If the Association is going to be of the greatest usefulness in promoting interstate and federal programs for the control of tuberculosis and in assisting local and state organizations in their work, it must have a wider representation and more money.

Second. Demands upon the National Association for field and other special lines of service at the present time are so overwhelming that they cannot possibly be met unless its budget is increased from 50 to 100 per cent.

Third. The special demands upon the National Association because of the war have greatly increased the necessity for expansion of its scope of work. If these opportunities are to be realized, the most assured way of financing the work should seem to be by an increased membership.

Fourth. The rapidly developing anti-tuberculosis movement has enlisted a large and increasing number of men and women in every part of the United States. The National Association believes that from this group it will be a comparatively easy matter to recruit at least 500 members. It is the hope of the Executive Committee that the membership of the National Association will soon reach at least 10,000."

#### WAR NOTES.

AN EXHIBIT FOR THE SOLDIER.—"The National Association for the Study and Prevention of Tuberculosis is preparing an exhibit on the general subject, 'The Health of the Soldier,' for use in the military camps in the United States and France. The exhibit will be shown in co-operation with the Educational Bureau of the War Work Council of the Y. M. C. A. in all the Association buildings. At least twenty different sets will be prepared.

The exhibit will be in fifteen panels of three sets of five, and will aim to stress the positive side of health. The first series of five panels will be headed 'Diseases are spread by close contact,' and will take up coughs and colds, measles, pneumonia, tuberculosis and syphilis. The second set will be headed, 'Diseases are prevented by knowledge and care,' and will portray how by covering the mouth in coughing and sneezing and by care in spitting, many dis-

eases can be prevented. The third series will be headed, 'Fitness for Fighting,' and will emphasize the need for fitness and the patriotic aspects of being fit to fight.

James Daugherty, a well-known artist, has been engaged to draw the color illustrations for the panels. These panels will be two-thirds illustration, and will portray as accurately as possible some interesting phases of army life.

In conjunction with the exhibit the National Association will also issue a series of stock lectures on tuberculosis and health, and a special circular for popular distribution in the camps, entitled, 'Red Blood.' "

#### BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending Feb. 2, 1918, the number of deaths reported was 262, against 307 last year, with a rate of 17.42, against 26.73 last year. There were 32 deaths under one year of age, against 43 last year.

The number of cases of principal reportable diseases were: diphtheria, 98; scarlet fever, 52; measles, 115; whooping cough, 22; typhoid fever, 2; tuberculosis, 73.

Included in the above were the following cases of non-residents: diphtheria, 9; scarlet fever, 6; measles, 2; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 10; measles, 2; tuberculosis, 27.

Included in the above were the following non-residents: diphtheria, 3; tuberculosis, 1.

THE MASSACHUSETTS HOMEOPATHIC HOSPITAL.—The annual report of the Massachusetts Homeopathic Hospital for the year ended December 31, 1916, records an ever-increasing number of patients who yearly visit this institution for medical treatment. The main hospital cared for 8305 patients, the John C. Haynes Memorial for 1346, the Sunny Bank Home for 186, Nash House for 86 and the Out-Patient Department for 14,443 patients. New ambulances have been purchased for both the main hospital and the contagious department, and an improved x-ray machine purchased and installed at the main hospital. The training school graduated 36 pupils and accepted 64. A new clinic for venereal diseases has been opened.

**HOSPITAL BEQUEST.**—By the will of the late Mary Jewett Bishop of Cambridge, Mass., the Cambridge Hospital receives a bequest of \$10,000 and the Cambridge Anti-Tuberculosis Association receives \$2000.

**COMMONWEALTH MILITARY EMERGENCY HOSPITAL.**—At the formal opening of the Commonwealth Military Emergency Hospital, attended by the Lieutenant-Governor, the Massachusetts Public Safety Council and Army and Navy officers, an interesting demonstration was given of the manner in which the hospital can be operated to meet the demands of an emergency.

“Lieutenant Colonel William A. Brooks, chief surgeon of the State, who conceived the idea of the hospital, had general supervision of the demonstration. A major from each regiment of the State Guard and several nurses, in charge of Miss Elizabeth Beden, attended to the reception of the ‘patients’ in the different wards. One-half of the Ambulance Company, under Captain Cunningham, had been called out and looked after the ambulances, of which twelve were used. Two quartermasters, Captains Hyde and Lap-ham, from the State Guard, also were on duty.

One of the wards was made up with beds complete, simply to show what the wards will look like when in apple-pie order, so to speak. The other wards that were used had to be gotten ready the same as for an emergency. Mattresses were rushed in ambulances from the storage rooms and were put on the bedsteads, then the sheets were put on and the beds ‘made up.’ It will be impracticable to keep the beds ready all the time, owing to the dampness due to condensation under the glass roof.

The ambulances were driven in from the rear entrance to the hall and carried their patients direct to the wards, where they were unloaded (perfectly healthy men representing the patients in this instance) and after an examination were taken to the operating room. Everything was carried out as if the patients had been real sufferers from injuries in an explosion, a fire or some other disaster, and the speed with which the victims were handled elicited praise from the spectators.”

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### NOTES FROM THE DISTRICT SOCIETIES.

**FRANKLIN DISTRICT MEDICAL SOCIETY.**—The following is a copy of a note suggested to be sent from secretaries of District Medical Societies to members who have entered the federal service.

*Dear Doctor:* You have answered a call to patriotic service, have enlisted under the government for military and humanitarian duties and are preparing for or fulfilling the various commissions for which experience, training, and natural capacities fit you. You were our professional neighbor in this hilly rural section, where the aged are as plentiful as the youth. The vigorous youth of a great country have been mobilized to stay the ravages of a social, a political, a national disease that threatens democracy,—homes, hopes, nations, the stability of institutions,—for life and strength and character of such are dependent upon the healthy interplay, and respect for the constructive service of the individual and the coöperative worker. Such assemblage of virile young men as surround you must be impressive and stimulating. You minister to their physical and mental health. You have also the privilege of moral and spiritual leadership. With all the liabilities incident to army life, the stress, the strangeness, you have a power for influencing the individual, much to be coveted; you have a part in the weaving of a quality of human fabric that protects its own life and interests, and those dependent upon it, from the organization of another human fabric representing a nation which has been greedily assuming a power and influence out of accord with the ideals of the times, progress and true brotherhood. Would to God there were a way of staying the perils, the frightfulness, the destruction of life and limb from the device, the momentum, the enginery—the fruit of conceptions of national lust—in some other way than

by all this sacrifice. Our society voted at its last meeting to look after your membership dues while you are in the service and of course will be pleased to hear from you in any way. To keep intelligently in touch with you will be a privilege for us and we hope a help and service to you, and as secretary for the unexpired term, I desire to convey in part expressed wishes of our members.

PAUL W. GOLDSBURY, *Treas.*

### Miscellany.

#### THE MASSACHUSETTS VENEREAL DISEASE PROGRAM. (PART IV.)

BY LYMAN ASA JONES, M.D.,

*Director, Division of Hygiene, State Department of Health.*

(Continued from page 209.)

VENEREAL disease reporting, measures to provide increased facilities for diagnosis and treatment, and repressive measures, phases of the Department's program already discussed in these columns, look toward the more immediate control of, and prevention of venereal disease.

Educational measures, the final phase of the Department's program, though of value in the work to be immediately undertaken, look rather to the future. They constitute not the least important part of the program, since the success of all other measures will be greatly increased by the active support of public opinion, and public opinion will not be well directed unless it is intelligent, founded upon knowledge of the facts.

The plans worked out for the reporting of the disease are in themselves educational, and provide especially for the instruction of the patient suffering with gonorrhea or syphilis, since each physician is required to give the patient a circular explaining what the disease is, what its consequences are, explaining the importance of proper treatment and giving necessary detailed directions for preventing the further spread of the disease.

The proposed clinics, scattered throughout the state, for which arrangements are already well advanced, will also serve as educational centers, where information may be secured and where approved forms of treatment may be demonstrated. The clinics will also serve as agencies through which arsphenamine, the Department's substitute for salvarsan, will be distributed.

Small framed placards, giving information concerning venereal diseases and indicating clinics where advice and treatment may be obtained are in preparation. It is the intention that such placards shall be posted in public toilets

or other suitable places in the vicinity of the clinics just mentioned.

For general distribution, the Department has prepared a small pamphlet, setting forth plainly and with authority, what the venereal diseases are, their importance as a public health problem, their consequences and how they may be avoided. Copies of this pamphlet may be had upon request.

Knowledge of this subject may also be spread in the community through lectures before suitable audiences. For the benefit of the public it is not necessary that such lectures go into details in many instances, but statements as to what these diseases are, what their dangers and consequences, may properly become matters of common knowledge. The department is prepared to supply to a limited extent, lectures in which this topic will be considered.

As a part of their regular work, local boards of health may properly engage in health educational work. Each board of health should be prepared to furnish correct information about health matters or to direct those who inquire to trustworthy sources of information or advice. This includes information regarding venereal diseases.

Work of this character could well be provided through a physician to the board of health, whose appointment in cities is authorized under the present law.

Educational measures for the prevention of venereal diseases should include also the instruction of college and normal students as to the relation of these diseases to public health, and the dangers which they threaten to community health.

It will mean much for the campaign against these diseases when the opinion of the community will permit, in newspaper or magazine, a proper consideration of these venereal diseases, not in a morbid or prurient manner, but merely on the same plane as the discussion of fire dangers, accidents in industry, or any other serious problem which threatens the public welfare, which, after all, is nothing but the welfare of each individual constituting the public.

#### THE BRITISH MARRIAGE RATE AND THE WAR.

THE *London Lancet* for November 24, 1917, contains the following interesting account of the rise and fall of the marriage rate in the United Kingdom during war times.

"The Presidential address of Sir Bernard Mallet, the Registrar-General of Births, Deaths, and Marriages, delivered on Tuesday last at the Royal Statistical Society, dealt in a valuable manner, because of his clearness, with those large questions of racial advance or decline which may dictate the fate of the world at the close of a devastating war. On the subject of the marriage-rate of this country he was partic-

ularly interesting. For England, Scotland, and Wales he indicated that a fortunate rise in marriage-rates has taken place, though this rise appears to have been in continuation of one which had already become apparent before the war broke out. The marriage-rates were not, as a matter of fact, increased at first by the outbreak of war, but at the beginning of 1916 occurred a sudden rise, due to marriages contracted by young soldiers in an army which was rapidly nearing its present immense size. The rise was not continued throughout the year, but has had its effect. Sir Bernard Mallet's summary of the actual figures shows that 200,000 people in England and Wales have been married between August, 1914, and June, 1917, who in the ordinary course of events would not have been married; the corresponding figure for Scotland he puts at 8000, while in Ireland the number of marriages has remained fairly constant, not appearing to be materially greater than the normal in the period from August, 1914, to June, 1917. These British figures Sir Bernard Mallet finds to be in complete contrast with those prevailing in Germany, and for the contrast he gives two reasons. The first is that an enormous German Army, being thoroughly prepared, rushed on to foreign soil at the outbreak of war, while the bulk of the British Army remained for some time under training at home, so that the men enjoyed opportunities for marriage that were largely denied to the German Army. The rise in our marriage-rates being practically dependent upon the size of the Army, the second reason for its occurrence has been the payment of substantial separation allowances and pensions. The effect which has already been produced by the war marriages, or rather by the abnormal number of marriages which took place in the year ending March, 1916, has had a real influence, at any rate for the time, in arresting the decline of births, which has been a feature in the statistical records of all civilized countries for some years. It is of good omen to learn that this decline has not affected the United Kingdom to anything like the extent to which it has affected Germany and Hungary."

#### A NEW HIPPOCRATIC MANUSCRIPT.

IN the issue of the *British Medical Journal* for November 17, 1917, is noted as follows the description of some recently discovered fragments in Greek of works belonging to those attributed to Hippocrates:

"Of two classical works attributed to celebrated medical authors, probably neither was really written by the assigned author. These are the *περί εβδομάδων* of the pseudo-Hippocrates and the pseudo-Galen's commentary upon the first seventeen chapters thereof extant in an Arabic version. The Hippocratic treatise is of far the higher importance because of its extreme antiquity, it having been alluded to by

Plato and numerous authors down to recent times, while the information which it affords of ancient pathological theories is useful. There is a Greek Codex of the work in the Bibliothèque Nationale; also a Latin version there and in the Ambrosian Library. Our reference to the *Hebdomad* is prompted by the fact that some fragments of the Greek recension were discovered recently, and these have been studied and assigned to the proper places in the Paris Greek text by Dr. von W. H. Roscher, of the University of Athens. Unfortunately, his book, '*Die Hippokratische Schrift von der Siebenzahl*' is published at Paderborn, and so not at present available for scholars here. It is a curious thing that among 110 palimpsests, found in various libraries during the last century, from which some valuable portions of classical literature have been recovered, only one containing eight pages of the '*Mulomedicina*' of Vegetius, which is in the St. Gall library, is of a medical character. Probably medical works were too useful for their parchments to be sold to the scribes to be cleaned and used over again for theological polemics, and sermons of the early fathers."

#### ORTHOPEDIC SURGERY IN WAR.

ON January 2, 1918, Dr. Sir Robert Jones delivered before the Hunterian Society of London an address on "Orthopedic Surgery in War Time," of which the following brief summary from the *British Medical Journal* will serve to give an idea of the substance. Interest in this address is augmented by the large part which American orthopedic surgery is taking and is to take in the development of this new surgical department in relation to war.

"Sir Robert Jones contrasted preventive with corrective orthopedics. The former is the task of every surgeon in the field, and, in so far as it meets with success, it limits the necessity for the corrective practice of the trained orthopedic surgeon, part of whose work is the deliberate infliction of the original injury and the treatment of the case over again. He paid a tribute to the work of the surgeons in France, who, he said, had shown greater initiative and had made more progress than we had at home. But gunshot wounds of the femur remain one of the great tragedies of the war, both by reason of the mortality from shock and the frequent deformity and shortening; and the lecturer rightly devoted an important section of his address to an analysis of the causes of failure and the means desirable to effect a drastic improvement. Efficient fixation and continuity of treatment should be the two guiding principles in fractured femur, to be put into practice by what Sir Robert Jones called efficient 'team work,' including the trained nurse and orderly, as well as the surgeon; and the patient should not be lost sight of at any stage of his *via dolorosa* from

the regimental aid-post until the War Office finds him fit again for service or hands him over to the Ministry of Pensions to be made a self-supporting and independent citizen. Many of the suggestions outlined in the address have, we understand, already been adopted at the front, and there are few more striking object lessons of the war than the orthopedic team work, in organizing which Sir Robert Jones has had so large a share."

#### A BRITISH TRIBUTE TO DR. JANEWAY.

IN a recent issue of the JOURNAL we published a brief obituary notice of the late Dr. Theodore C. Janeway, of Baltimore. The following more extended sketch from the *British Medical Journal* deserves republication as evidence of the personal and professional esteem in which Dr. Janeway was held by his British colleagues:

"Professor Janeway was about forty-five years of age, and was the son of Dr. Edward G. Janeway, a distinguished consultant physician of New York City, who died about ten years ago, and was one of the leaders of the medical profession in the United States. After taking his degree at Yale University, he studied medicine and graduated from the College of Physicians and Surgeons in New York. He became a teacher almost from the day of his graduation, and at various times was connected with the leading New York hospitals, including Bellevue, St. Luke's, and the Presbyterian. On the retirement of Dr. Walter James he was appointed to the Chair of Medicine at Columbia University, New York. Four years ago, when a liberal grant from the Rockefeller Foundation made it possible for the trustees of the Johns Hopkins University, Baltimore, to place the Chairs of Medicine, Surgery, and Pediatrics on a whole-time basis, Professor Janeway was called to occupy the Chair in Medicine in that university, a chair previously held by Sir William Osler and Professor L. F. Barker, and which he occupied at the time of his death. This decision on the part of the trustees of that institution initiated a new departure in medical education in the English-speaking world.

Professor Janeway was an enthusiastic investigator, and availed himself of the clinical material and laboratories in the various institutions he was successively connected with for carrying out the researches he became interested in. He was one of the pioneers in the study of the effect of disease on arterial blood pressure, and about ten years ago published an excellent volume on the subject. At the time of his death he was actively engaged on a revision of this work. His contributions to medical literature have been very numerous and important. He has published noteworthy papers on diabetes mellitus, dealing with the metabolism and treatment of the disease. In recent years he had been especially interested in the study of ne-

phritis, utilizing the newer methods of studying this disease, such as Ambard's coefficient, the estimation of the non-protein nitrogen in the blood, and the various forms of functional renal tests, as a means of determining the prognosis and of ascertaining the best dietetic treatment in each individual case. He published several papers on this important subject. As a member of the Board of Trustees of the Rockefeller Institute in New York, he was keenly interested in the investigations carried on there by Cole and his associates concerning the various strains of the pneumococcus and the specific serum therapy of pneumonia—the disease from which he himself unfortunately succumbed.

Professor Janeway was also to the front in the popular fight against tuberculosis, and was ever ready to give his assistance in the campaign being waged against this devastating disease. His interest in this subject was further manifested by the part he took in the establishment of the Post-graduate School for the Study of Tuberculosis at Saranac Lake, New York, in memory of Dr. Trudeau, and by the fact that for the last three years he was president of the Laennec Society at the Johns Hopkins Hospital, Baltimore, a society organized there by Sir William Osler some fifteen years ago for the study of tuberculosis. Before this society nearly all the leading students of tuberculosis in the United States have presented papers.

When the United States declared war on Germany in April, 1917, Professor Janeway was called into active service in the Army Medical Corps, of which he had been for several years a member. Until a week before the Johns Hopkins University Unit sailed for France, in the latter part of June, 1917, it was his intention to go with the unit as chief of the medical division. His friends insisted, however, that he could probably serve his country better by remaining in the United States as head of the department of medicine in the Johns Hopkins University and in an advisory capacity to the Government. With considerable reluctance he was persuaded to remain, and since then, with the rank of major, he has occupied a desk in the office of Surgeon-General Gorgas at Washington, where his scientific training and organizing ability have been of the greatest service to his country.

As a bedside teacher and clinical lecturer, Professor Janeway had few equals. He was a fluent speaker and a clear thinker, and had a remarkable memory for recalling cases previously observed in order to elucidate phases of the particular subject under discussion. He possessed the admiration and devotion of all his friends and *confrères* in the University. In his death the Johns Hopkins University sustains a severe loss, especially at a time when a new departure in medical education was being given its first trial, and when every other important medical school in the United States was watching the experiment.

Professor Janeway's home life was charming. His was a devoted family. His house was a rendezvous for the younger medical men and for the senior medical students. All busy men usually find time for one or more hobbies. Professor Janeway was very fond of amateur photography and of music. For many years he had been accustomed to spend his vacations with his family at a delightful summer colony in the Adirondack Mountains in Essex County, New York, where he was able to indulge himself in his chief exercise, that of long walks. Those who knew him well mourn a sincere and devoted friend, and our sympathies go out to every member of his family in their sorrow.

Sir William Osler writes:

'The death of this distinguished teacher from pneumonia, at the early age of forty-five, is a severe loss to scientific medicine, and, following so soon upon that of Dr. Mall, is another hard blow to the Johns Hopkins Medical School. Dr. Theodore Janeway's life justified a singularly fortunate birth and breeding. The son of an unusually able physician, Dr. Edward G. Janeway—a strong-fibered, honest man, who rose to the first rank in the United States—nature and nurture combined to make his path easy. Connected at first with the New York University, in 1909 he became professor of medicine at Columbia, and began a successful reorganization of the methods of teaching and investigation. He collected able young assistants from different parts of the country, and it is not too much to say that by precept and example he put a new spirit into clinical medicine in New York. His "Clinical Study of Blood Pressure," published in 1905, admirably illustrated the application of physiological methods to bedside problems. With a first-class training and great energy, he soon became recognized as the leader of the younger group of physiological clinicians who have been quietly but surely upbuilding and transforming American medicine. When, in 1914, the Johns Hopkins Medical School accepted the Rockefeller bequest on condition that a certain number of the clinical professors should be whole-time, Dr. Janeway was naturally the choice in medicine. He entered upon a novel and untried position, but judgment is strongly in favor of the experiment as carried out by Dr. Janeway. With ample private means, rare constructive ability, and a keen capacity for research, there were combined in him all the elements for a successful whole-time teacher. He upheld and extended the ambition of the clinic to be not alone a school to train men in the knowledge of disease, but in the methods of dealing with its unsolved problems. The published work of the past three years shows that he and his pupils were engaged in the best type of clinical research. When the United States declared war he was among the first called to coöperate with Surgeon-General Gorgas in reorganizing the medical department of a great civilian army. He became deeply in-

terested in getting the young American physicians trained to meet the many novel conditions of practice in France, and only a few weeks ago the writer had a long letter from him full of plans and details. His death is a sad loss to us all—the cruelly premature death of a man who has a great work in hand.'"

## LETTSON AND THE LONDON MEDICAL SOCIETY.

In the issue of the *British Medical Journal* for January 12, 1918, appears a valuable and exhaustive account by Dr. Sir St. Clair Thompson, of John Coakley Lettsom and the foundation of the medical society which bears his name. This was delivered as a presidential address before the Medical Society of London in October, 1917, and the following representative extracts from it may serve as a less complete sketch of the medical life of London in the late eighteenth and early nineteenth centuries and of one of its more distinguished figures:

"John Coakley Lettsom was one of twins, and was born in 1744 and died in 1815. The following sketch of his career may be more interesting if we recollect that he had no great social or family influence, that he never attended any noted school or had a regular university course, that he was not a Fellow of the College of Physicians, that he never held any Court appointment, and was not on the staff of any well-known London hospital. He may have had his good turns of fortune, but he had few advantages in his birth, education, and upbringing, and the success of his evidently healthful, happy, vigorous and useful career was due almost entirely to his own application, his keenness in his profession, his love of humanity, the breadth of his interests, his zest for life, and his happy disposition.

He was born in the West Indies and may have had some native blood in his veins, for he refers in a letter to the suggestion, without denying it, that he had the 'volatility of the Creole, with the plodding industry of the German.' He had no sister, and as he was sent to England at the early age of six we cannot claim much home influence in forming his character. He never saw his father again. He was sent to a small school of 40 or 60 boys at Penketh, in Lancashire, kept by a member of the Society of Friends, for he belonged to a Quaker family, and he lies buried in the Friends' Burial Ground, Little Coleman Street, Bunhill Row. While at this school he came under the influence of the well-known Quaker minister, Samuel Fothergill, of Warrington, the younger brother of the celebrated Dr. John Fothergill, of London, and from this more or less accidental acquaintance we can trace an influence on the career of Lettsom and the origin of our own Fothergillian gold medal. At this

small day-school Lettsom remained only until the age of fourteen, and during this time, if he learned little Latin and less Greek, he had the much greater advantage of acquiring a knowledge and love of nature by being allowed and encouraged to join in the usual country sports of schoolboys of a former generation. Following the hounds on foot, sometimes assisted by pole-jumping, bathing and swimming, the use of bow and arrow, fishing, sliding, and long days spent in nutting or bird-nesting, not only helped to form a vigorous and active constitution, but gave a keenness in observation, a resourcefulness in emergencies, a quickness of eye, and a love of fellowship with nature, which the present generation runs the risk of losing, with its exaggeration of formal games confined within monotonous playing grounds.

Lettsom's education finished in his fourteenth year. His father was dead, and his mother in the far West Indies had married again. He was then sent to Liverpool for a business training, but at the end of a year circumstances arose which resulted in his being apprenticed as a pupil to Abraham Sutcliff, a surgeon and apothecary at Settle, in Yorkshire. If the school in Lancashire helped in the promotion of Lettsom's physical vigor and powers of observation, it is to his five years' residence in Yorkshire that we may ascribe the opportunity for the acquisition of a love of learning, much book lore, habits of work, training of memory, and the faculty of managing patients. His master, Sutcliff, was an excellent classical scholar, though quite self-taught, and under his guidance he made such progress in Latin that he was able to study in that language the works of Boerhaave, Winslow, and others. We should remember that in the eighteenth century Latin was still a living language, for Lettsom, like all physicians of the time, could follow lectures in it at foreign universities, discuss medical matters with colleagues of various countries in Latin and, by its medium, submit himself for a diploma at Leyden. He records that he 'attended the lectures of Innes, Sinclair, Plummer, and Rutherford in that language (*i.e.*, Latin), in which I was pretty well qualified to maintain a conversation or dispute.' With a party of friends, he shared the expense of procuring a French master from London, so that he not only could read the language with ease, but could speak and write it fairly well.

At the end of his five years in Settle, and at the age of twenty-two, Lettsom, in 1766, started for London, where he was without a relation and did not know a friend. His subsequent career is so well epitomized in a letter he wrote twenty-five years later that I cannot do better than transcribe it:

'London, December 31st, 1791.

Medicine is rather a practical than a brilliant art and depends upon study as much as genius. Poverty led me to physic. I was placed with a country apothecary, whose fee was moderate. I

had no particular predilection for medicine. I never possessed genius; my memory was bad; I made dictionaries and tables of my own invention; to assist memory, I formed indexes of what I read, and by industry acquired something. I came to London, and saw Dr. (John) Fothergill, my ambition was inflamed, and I dared to say, London shall be my theatre; but having no more money than to carry me through the hospitals, I could not attend many lectures, and upon this depended my improvement; for instead of hearing and learning of lectures, I was compelled to learn at the bed of sickness. Here I saw nature, and learnt my art without the leading-strings of professors. I acquired an early habit of behaving with kindness to the sick, and having known want, I knew how to sympathize with distress. After two years in an hospital, I went to the West Indies to get assistance to bring me upon the theatre I now act. Six months abroad enabled me to visit London, Edinburgh, and Leyden, and ultimately to sit down in the first city; and I know not why any other person, with £500, may not do the same.

Yours respectfully,

J. C. LETTSOM.'

This is a good letter with a brave ring in it, revealing much of our Founder's character, both by what it states, and also by what it omits. Lettsom does not mention in this letter that though he returned, for the first and only time in his life, to his native island to get assistance, his first action on arrival in the West Indies was to free the fifty slaves he had inherited. Apart from these slaves, and a small portion of land, he was not possessed of £50 in the world.

The 'assistance' which he went to seek on the Island of Tortola he himself created by starting practice there at the age of twenty-three, and in the short space of five months he amassed the surprising sum of £2000. He must surely have had a keen sense of the business side of his profession if at this age, as a first start, and in an insignificant West Indian Island, he could earn from his profession at the rate of £4800 per annum. His income later on was equally astonishing.

But his large practice and all these multifarious occupations did not exhaust Lettsom's boundless activity. His various interests and his general culture, added to his hospitable and cheerful character, brought him into contact with many of the most celebrated people of his generation.

Lettsom was associated with some of the most celebrated men of his time, an age rich in historical personalities. We have seen how he was frequently received by King George III; he records his impressions of hearing Pitt and Fox speak in the House of Commons; he corresponded with 'General Washington, of America,' Dr. Rush of Philadelphia, and with Benja-



min Franklin; Sir Charles Linné (Linnæus) wrote to him in Latin; he studied under Dr. Akenside (the author of the 'Pleasures of Imagination,' whom he found 'the most supercilious and unfeeling physician he had hitherto known'); amongst the founders of the Royal Humane Society (1774 he came in contact with Dr. Oliver Goldsmith, Dr. Heberden, and William Fox; he interrogated George Bidder, the remarkable eight-year-old boy who lived in St. Bartholomew Close, who could not write and scarcely read, yet made long arithmetical calculations (May 17th, 1815); he came across Joanna Southcott, and attended Lady Huntingdon; he met Braham at musical parties, and he dined with Wilkes, Boswell, and Lee the American; he knew the celebrated Lady Hamilton and was very grateful to her for her kindness to his son when visiting Naples; Sir William Hamilton, 'loaded with years and honors,' visited him at Grove Hill; it is not clear if he ever met Lord Nelson, but the great sailor expressed his 'respect and admiration' over several of the letters written by Lettsom; amongst his intimate friends were Edward Jenner, of Berkeley, in Gloucestershire, and Babington, who nearly invented the laryngoscope. Boswell, whose verses I have already quoted, was a frequent visitor at Grove Hill, and Dr. Samuel Johnson must often have called in there on his way to tea with Mrs. Thrale at Streatham.

As I have said, Lettsom's good income, which he spent so generously, was earned by constant hard work. As early as the age of 23 he records that he seldom prescribed for fewer than 50, and often twice as many, patients before breakfast. When he was 38 he writes that, 'sometimes for the space of a week, I cannot command 20 minutes' leisure in my own house.' A year later he writes, 'since 1769, when I first settled in London, I have not taken one-half day's relaxation, and I cannot get to Grove Hill above once a fortnight.' In 1791 (he was then aged 47), he observes, 'during the last 19 years not one holiday have I taken, and this will probably be the last of my life, unless sickness compels me to seek leisure.' The 'holiday' here referred to consisted in travelling by coach to Margate, spending two hours on important business there, and returning the same day—144 miles in the day and night. In another letter he records that his practice had not suffered him to sleep in his own bed for 13 following nights, and he evidently spent much, not only of his days, but of his nights, in his travelling coach, for one correspondent reproached him for 'converting his carriage into a dormitory and a suttlng-booth.' His carriage served him for still another purpose; he was a voluminous writer, and yet nearly all his letter-writing was done in his carriage. He used up three pairs of horses daily. When we recall the condition of the roads in the eighteenth century, the pace at which his coach must sometimes have travelled, and the non-invention of stylographic

pens, it is astonishing to glance at the number, length, and completeness of the letters which have been preserved, and to read, when he was 60 years of age, that 'my professional duties incessantly occupy me, and compel me to write all my essays in my carriage.'

If all these strenuous days and nights had been devoted solely to his extensive practice, we should not be surprised. But his interests and self-imposed duties were spread over a large variety of subjects, and he rendered important public services as a philanthropist. In 1770 he founded the General Dispensary in Aldersgate Street (the first of its kind in London); he established the Sea-Bathing Infirmary at Margate; he was one of the founders of our own Society; he was an active member and a lecturer of the Philosophical Society; he was one of the founders of the Royal Humane Society; he was a friend and supporter of Edward Jenner and an active supporter of the recently introduced vaccination for smallpox; the reform of prisons was responsible for his friendship and admiration for John Howard, and the amelioration of the condition of the poor and helpless was his constant care. He was the first man to introduce into England the mangel wurzel, as is jestingly referred to in the verses I have quoted, and he always kept up his interest in botany, agriculture, and fossils. He wrote a book called the 'Naturalist's Companion,' which ran through three editions. He pointed out the use of birds—even crows—and of moles in Nature's economy, and pleaded for their preservation. He anticipated our cult of the open window and the researches of Leonard Hill when he wrote his 'Essay on the Effects of Heated and Stagnant Air.'

Soup-kitchens met with his entire approval; the manner of preparing the various kinds of soups is minutely noted in his pamphlet, and the best receipts are given for various articles of diet. Alas, that, after some 125 years, our soups should still be execrable and our cuisine a by-word amongst the nations! In 1798 he published a tract entitled 'Hints Respecting the Effects of Hard Drinking.' In 1795 he wrote a tract on 'Hints Respecting the Chlorosis of Boarding Schools,' with advice as to games, diet, clothes, cleanliness, etc. He was greatly interested in the history of medicine. The *Kadaververwertungsanstalt* in Germany, about which there has recently been some commotion in our press, would appear, from a letter of Lettsom's, to have been anticipated by 124 years. In 1793 he writes: 'A friend of mine has lately discovered the art of changing human flesh into spermaceti candles. This is not a fable. He means to light up the large room of the Royal Society with the leg of a man. I advised him to go to the swamps of Dunkirk, where he might find materials sufficient to supersede all the tallow of Russia. If this project succeed we shall refine on the custom of the ancients in burning their dead. We may burn our friends over a

supper or pipe. This scheme may puzzle the Materialists about collecting the remains against the last day.'

Certainly his constant 'succession of employments,' his enormous practice by day and by night, his long coach journeys, his multifarious social engagements, his hospitable entertainments, the care of his garden, his voluminous correspondence, and his extensive publications fill one with wonder. When we recollect that this full life was lived without our modern aids to despatch in the way of secretaries and stenographers, telephones and telegrams, railways and motor cars, one is the more astonished.

This being Lettsom's personal appearance, what was there in his manner of work to explain all he got through? His biographer gives as the following explanation: 'To a naturally good capacity he united the greatest degree of perseverance. This enabled him to surmount various obstacles that in the course of his practice naturally occurred. The want of a good memory obliged him to be methodical, and by great, and it may be said a truly surprising, regularity, he so economized his time as to be capable of engaging in the immense variety of occupations alluded to.' These notes to help his defective memory are elsewhere referred to as amounting to no less than 40,000. Lettsom, although a keen and independent observer, a ready writer, and a frequenter of our Medical Society, never made any striking contribution to medical science. He had no great hospital appointment; he had no pupils to spread his fame; and he had no position at the Court or in the College of Physicians to give him prestige. His success in practice must have been due to his own personality, his sincerity, his great industry, and his direct influence upon his patients. It is abundantly evident from his letters that he enjoyed not only the exercise of his art but the opportunity it gave his broad humanity to be a real comforter and friend to his patients. He evidently had the happy knack of getting on easy terms with his patients; he had Mirabeau's '*don terrible de la familiarité*,' for he writes, 'I would rather be familiarly happy than acquire distant veneration.'

It was possibly this equable temperament, and this placidity in the presence of disaster, which led to the well-known lampoon:

'When any sick to me apply,  
I physicks, bleeds, & sweats 'em;  
If after that they choose to die,  
What's that to me,

I LETTSOM.'

His pliability may have led to his being caricatured in the *Westminster Magazine* of September, 1782, under the title of 'Dr. Wriggle or the art of rising in physis.' He philosophically refers to this as 'Very complimentary.'

As a fervent disciple of his friend Edward Jenner, he warmly espoused the cause of vacci-

nation at a time when it was still abused and opposed, with the result that 'in Germany vaccination had nearly extinguished the smallpox' and 'was more general in every part of Europe than in England.' Evidently this British discovery of medicine in the eighteenth century met with the same reception in its native land as did Lister's in surgery in the nineteenth century. His support of the Humane Society, his enthusiasm for the improvement of prisons, his divagations into the work of the Philosophical Society, certainly show no self-seeking, did not improve his professional status, encountered strong opposition, and required much courage. His crusade for the mangel wurzel, as is seen in Boswell's verses, only exposed him to ridicule. He did not flinch at opposing fashion, or fear to show that he had a frugal mind, when he animadverted upon the practice of wearing the hair powdered, as unnecessarily consuming a vast quantity of flour. He undertook the ungrateful task of exposing quackery. Courage could never have failed him, and it must be due to his *suaviter in modo* that he was able to do so much and yet preserve his position and his friends. An instance of this courage in private life is shown by the charming, delicate, and feeling letter he wrote to his friend Boswell, deploring that 'in scenes of pleasure which I have cordially enjoyed. . . I have observed, not merely a too frequent use of the glass, but that mixture of liquors which, as a professional man, I can add, tends to injure the best human fabrick.' This required courage as well as tact, and was done in such an evidently sincere and friendly way that we are glad to see that Boswell in his reply wrote: 'I am not cheerful at present; the visible wearing away of Sir Joshua Reynolds depresses me much; and, besides, I have not been so attentive as I should be to your most friendly recommendations as to regimen. *Spero meliora.*'

Lettsom's vitality must have been enormous. Although as early as his thirty-ninth year he talks of 'the buffetings of his slender habit and weak constitution,' yet in his sixty-sixth year he writes, 'I am as alert as in the days of my youth.' Still he is sufficiently anxious at times about his health to write, 'I fancy immediately upon illness that I am going to the Majority; but,' he at once adds, 'feeling some little comfort in having done something in the world; which persuades me that I shall meet my predecessors with pleasure, I soon sleep my distempers off.' He must have been a sound sleeper, for, as I have already narrated, he often did not have 20 minutes' leisure in a week; he passed 19 years in London without a single holiday; and from the age of 23 he was 'in perpetual exertion' in his profession.

To such a temperament as Lettsom's death came as he would have wished it—swiftly and mercifully. On Oct. 22, 1815—Waterloo year—he assisted at a post-mortem examination, remaining for two hours in a cold room. Next

day he felt chilly and unwell. On the 25th he wrote a note saying he had had a rigor, followed by a dreadful night, but that he was up and intent on seeing a few patients. He added, 'For the last 27 years I have not been confined by illness.' Two days later he was urged to see Dr. Babington, but answered 'that he should be better in a few days, and that he wished for no one to attend him.' His dauntless spirit, in spite of the entreaties of his friends, took him out to see a poor patient in Whitecross Street, but on his return he had to be lifted from his carriage, and that evening took to his bed. Even here, and in spite of excruciating pain, which prevented him from turning without assistance, he was eager to get reports on his patients and to make arrangements to attend the approaching anniversary of the Philosophical Society. On the following day, Oct. 30, he appeared improved, but died on November 1, 1815, only five days after he had been out to visit his last patient.

I have completed this sketch of our Founder's life before describing when and how our Medical Society came into existence. Lettsom's multifarious writings were frequently issued in the form of short pamphlets to which he gave the title of 'Hints.' On June 23rd, 1773, he issued a pamphlet entitled 'Hints on the Establishment of a Medical Society of London.' The vigor with which he followed up design by action is shown by the fact that the Society was inaugurated that same year, and the completeness with which he planned his scheme is demonstrated by observing that the 'statutes' he drew up in 24 pages are in such order and detail that there will be found but trifling points of difference when we compare them with our present rules of 145 years later. After an introduction, in which he says that societies 'excite a generous ardor in liberal minds and raise even envy itself into useful emulation' and that 'the principal part of our knowledge must be ever derived from comparing our observations with those of others,' he points out the advantages of discussion, the usefulness of honorary rewards, and the virtue of a medical library. We still follow Lettsom's original design in numerous details of the Society's regular existence. Naturally, having received the distinction of following the illustrious Lettsom in this honorable chair, I turned with particular interest to inform myself of his directions to the Presidents of all time. I note that the President 'shall regulate all debates, and prevent any from being prosecuted upon trivial subjects,' and that 'all members shall pay implicit obedience to the President in the execution of his office!' The only one of Lettsom's statutes which we appear to have quite neglected is No. 4, Chapter IV, where it is enacted that 'the President, whilst in the chair, shall be covered, except when addressing himself to the whole Society'!

The early meetings of the Society were held in Lettsom's house, in Sambrook Court, Basinghall Street, and its first home was in Crane Court, Fleet Street. Here the Medical Society remained until 1788, when Lettsom presented it with the freehold of a house in Bolt Court, Fleet Street, where it was established until 1850. The house was valued at £2500. It is rare for benefactors to make such handsome gifts during their lifetime. The shifting of the centre of medical life more westward led to our then taking a house in George Street, Hanover Square, and we were finally established in our present house in 1871. The fine picture in this room shows a group of the Founders of the Society, the central figure being Lettsom standing up in the act of presenting the deeds of our Bolt Court house to the President. This oil-painting by Samuel Medley is a valued possession of our Society. Medley was the better able to execute this as he was the associate and intimate companion of Lettsom, Sims, Babington, Blair, Hooper, and Jenner. The painting contains 22 life-like portraits of our Founders, most of them being the leading medical men of the period. It is doubtful if there exists another medical picture containing so many actual portraits of well-known individuals. Edward Jenner is represented standing close to the left shoulder of the President. It will be noticed that his figure is smaller than the others and somewhat out of perspective. This is because Jenner was not one of the original Founders and did not appear in the picture as originally painted. His portrait, in consideration of his celebrity, was painted in later. It will be noticed that the President is seated, and following Lettsom's 'Hints,' he remains covered and is wearing his cocked hat.

The Fothergillian medal, 'in gold of 10 guineas value,' was founded by Lettsom in a letter addressed to the Fellows of the Society on May 25th, 1784. In 1791 Lettsom himself won the prize essay for the Fothergillian gold medal. He delivered the annual oration in 1778, choosing as a subject 'History of the Origin of Medicine.' He said he had to deliver this oration at short notice, but was able to effect it by the facility with which he could refer to his 40,000 notes! How did he manage it in those days before card-filing systems were invented? On March 8th, 1804, he again delivered the annual oration, 'On the Origin of Vaccine Inoculation, with a Biographical Account of Dr. Jenner,' to whom the Fothergillian gold medal was then presented.

In 1850 the Society perpetuated the name of our founder by establishing the Lettsomian lectures.

The published records of the Society's work appeared under the title of 'Memoirs' or 'Proceedings,' and, later on, under the present one of 'Transactions.' We find they exist from 1787 to 1805, and from 1810 to 1817, but between these two periods there is a hiatus. Sub-

sequently there appeared only one volume in 1846 and another in 1861. The publication of the 'Transactions' was resumed in 1872 and has continued annually ever since.

As our 'Transactions' covered the period of the Peninsular and Waterloo campaigns, I looked through them to see in what way they reflected the military medicine and surgery of the period. I confess to considerable surprise in not finding a single communication reflecting the wars in which our country was then engaged. This is striking when we remember that in the session of 1915-16 every single communication made to the Society was on a war subject, with the exception of the annual oration by myself on 'Shakespeare and Medicine.' But it is also noticeable that the Boer War is reflected in our 'Transactions' by one solitary communication on 'Typhoid Fever.' This shows that our previous wars have been of the nation's life a thing apart—the present world war embraces our whole existence.

I had occasion last year in 'Shakespeare and Medicine' to point out that our Society possesses the only record of the nature of the death of our national poet. It is curious that we also possess a record of the death wound of our national hero, Nelson. The Minute Book of the Medical Society for Dec. 23rd, 1815, contains the following: 'A letter was read by Dr. Gillespie from the surgeon on board the *Victory*, who dissected the wound of the late Admiral Nelson, describing the progress of the musket ball. It passed through the left shoulder, penetrating one lobe of the lung, and, after perforating the vertebrae, was lodged in the surrounding muscles.'

The rest of the chronicles of the Medical Society, and all that it has done, are they not written in the handsome volumes of the 'Transactions'—a storehouse of interest and instruction to all our members?

In this sketch of our Founder I hope I have succeeded in strengthening the loyalty of all Fellows to the oldest Medical Society in London, and in conveying to your minds the attractive picture of the Founder which I have received from a perusal of his life and letters. It is well summarized by his biographer, who describes Dr. John Coakley Lettsom as 'good, humane, benevolent. We have lost in him the sensible, firm, and upright friend, the able, honest, and experienced physician, and the pleasing, instructive companion of a social hour.' Our Society need seek for no better exemplar."

#### SOCIETY NOTICE.

WORCESTER DISTRICT MEDICAL SOCIETY.—The next regular meeting will be held Wednesday, February 13, at 4.15 p.m., in G. A. R. Hall, Worcester. Program:

1. Experiences of an American Surgeon in a British Base Hospital. By Major Kendall Emerson.
2. The Halifax Disaster. Illustrated by Lantern Slides. By Major Peter O. Shea.

ERNEST L. HUNT, *Secretary*.

## Correspondence.

### AMERICAN DOCTORS IN ENGLAND.

Milton, Mass, Jan. 9, 1918.

Mr. Editor:—

The following word has just been received from one of the large cities in Essex County, England, a region which has received many air raids and where a large contingent of men is constantly in training. It gives a glimpse of what manner of men we have given to the hospital service and how warmly they are welcomed and appreciated.

"It seems so fine that England and America are allies, now, both working for the same great cause. We were all so rejoiced when America joined in the war and our hopes are centered in that splendid Old Glory.

"My sister, Mrs. G., is on our local Food Control Committee and finds it interesting, if very hard, work. Her special province is inspecting potatoes. She has been meeting some of the American doctors who are stationed here at the military hospital and she has invited them to her house. Everyone is so pleased with these doctors and they are everywhere welcomed. Everyone notices and comments upon their courteous manners not only to outsiders, but to the non-commissioned officers and privates in the ranks, so very kind, friendly and entirely informal. Some of the R.M.C.A. have told me how pleasant they were to work under, so alert and practical, treat people as on an equality and have absolutely no 'side' or 'swank' about them. My sister is struck with their attitude toward women, and judges by them that all American women receive both courtesy and consideration.

"At my sister's suggestion, the Mayor and Mayoress paid the American doctors an official visit of welcome at the hospital. It was a jolly visit, a good tea being served in the doctors' little sitting room which was full to overflowing. They had started decorating for Thanksgiving Day, and there were bits of holly hung on nails around the bare walls. The Mayor then invited all the American doctors to a tea at the Town Hall on Thanksgiving Day, specially to be held in their honor,—the first official notice ever taken of the great American day. The Aldermen and their wives were asked to meet them, and the regalia and civic treasures were laid out for their inspection. (A magnificent building, rich in splendid paintings and historical relics.) The doctors had a hearty reception. They were taken out to see the City Lions, especially the Castle, with its ancient dungeons, the old Priory and the beautiful Abbey gateway. As they moved up the street they caught sight of our American flag father had hung from the window. Off went their hats and they looked so pleased. Afterwards, my sister had them to late supper and the table was decorated with my own tiny American flags which you sent over. So you see how much we think of your fine medical men over here."

MARY FIFIELD KING.

#### RECENT DEATHS.

DR. EDWARD PAGE, the last surviving member of the first dental class to graduate from Harvard University, died in January. Dr. Page was born at Groton, Mass., Dec. 4, 1826. He was graduated from Harvard Medical School, and was one of the organizers and first president of the Harvard Dental Alumni Association and treasurer from 1874 to 1880. He was treasurer of the Massachusetts Dental Society from 1869 to 1897.

CHARLES PARKER LYMAN, M.D., died at Los Angeles, Calif., on February 2. Dr. Lyman was born in 1847 and for fifteen years was Dean of the Harvard School of Veterinary Medicine at Cambridge, Mass. He retired from that position in 1902. Dr. Lyman is survived by his widow, a daughter and a son, Dr. Richard P. Lyman of Lansing, Mich.

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No. 8

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## CONTENTS

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ACUTE LOBAR PNEUMONIA.

*By F. C. Shattuck, M.D., Boston, and C. H. Lawrence, M.D., Boston.*

RECENT TREATMENT OF LOBAR PNEUMONIA. *By Thomas F. Leen, M.D., Boston.*

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STATED MEETING OF THE COUNCIL. FEBRUARY 6, 1918.

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### MEDICINE.

#### DIGITALIS IN PULSUS ALTERNANS.

WINDLE states (*Quart. Jour. Med.*, July, 1917) that he has used digitalis with benefit in over 100 cases of this form of arrhythmia. This is contrary to the current teaching that digitalis is contraindicated in this condition as likely to make it worse. This discrepancy Windle ascribes to the frequent confusion with the bigeminal pulse, which frequently results from large doses of digitalis. The alternating pulse is distinguished from bigeminy by the fact that the weak beat is not premature, but comes at the normal interval.

Pulsus alternans is met with chiefly in elderly persons with arteriosclerosis and hypertension. Such persons rarely live more than two years after the appearance of the alternation. Sooner or later dropsy invariably develops. In the first attack of dropsy Windle has found that digitalis in full doses not only removes the alternation, but relieves the dropsy and dyspnea. The continued use of the drug tends to postpone the final fatal outcome, and a second, or even a third attack of dropsy may be relieved. A number of illustrative tracings are appended.

[W. T.]

### MILITARY SURGERY.

#### GUNSHOT WOUNDS OF THE CHEST.

SOLTAU AND ALEXANDER (*Quarterly Journal of Med.*, July, 1917) report some interesting observations on a large series of wounds of the chest. The most common result was hemothorax. The hemorrhage, if moderate in amount, and not infected, did not require treatment. A fairly high fever, lasting one to three weeks, often occurred without sepsis, owing to the absorption of blood. Partial clotting with the deposition of fibrin took place in the pleural cavity, but massive clots were rare. The occurrence of infection with the gas bacillus in hemothorax was indicated by the appearance of small tympanitic patches in the dull area. The physical signs of hemothorax differed in two important respects from those of ordinary pleural effusion: (1) the dome of the diaphragm was elevated, not depressed, and (2) the apex beat was displaced toward and not away from the injured side. This is explained on the basis of paralysis of the diaphragm and collapse of the lung on the injured side, the collapse being an important factor in checking the hemorrhage.

Pneumothorax was common, though less so than blood in the pleural cavity. In the early cases it was due to air in the pleural cavity, while in those with late onset it was usually due to the gas bacillus.

Collapse of the lung occurred with surprising frequency, being present in about one-half of the cases.

(Continued on page vi.)

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(Continued from page 16.)

The physical signs varied with the degree of the collapse; in massive collapse there were flatness, absence of breath sounds, and of vocal and tactile fremitus, simulating the signs of fluid; with partial collapse, dulness, tubular breathing and increased fremitus, sometimes with râles, were met with. These signs were not due to pneumonia, for the constitutional signs of this disease were lacking, the chlorides in the urine were not reduced, the arch of the diaphragm was drawn up and the apex of the heart displaced toward the injured side. The authors suggest as the cause of the collapse a reflex action from the terminals of the vagus in the lung, through the medulla and the phrenic nerve to the diaphragm with paralysis of the diaphragm. Collapse usually takes place at the base of the lung; it may disappear with great rapidity.

Contra-lateral collapse is a most interesting complication unknown before the war. The signs are those already mentioned under "partial collapse," but they occur on the *uninjured* side and in cases where injury is confined to one lung. It was noted in 17% of the cases.

[W. T.]

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[G. M. B.]

#### TRENCH FOOT.

TASSONE (*Polyclinico*, Surg. Sect., June 15, 1917) during 18 months' service in the army, from July, 1915, to December, 1916, has seen, among 26,000 sick and wounded, 3793 cases of trench foot. The chief etiological cause of trench foot is damp cold and prolonged standing still. Predisposing causes are varicose veins, generally weakened condition, especially intestinal disorders, sudden changes of temperature, especially noted in the soldiers who come to the Trentino from Albania, and mechanical factors such as tight shoes.

Regarding treatment of trench foot, he advises from the start prolonged soaking in warm water, with massage, keeping the patient in the cold, and the gradual moving to the ordinary temperature. Applications of gauze soaked either in salt solution or hypochloride of calcium; later light massage with plain or camphorated vaseline. Ulcerations are treated accordingly and the pain, which is sometimes intense, by narcotics.

Effectual prophylaxis of trench foot requires daily inspection of the feet, where conditions predispose to it, active and passive motion, keeping the limbs elevated, applications of moist or dry heat. In the third grade cases surgical intervention may become necessary.

Proper drainage of trench. Prevention of prolonged standing still; during the rest periods use warm foot-baths and the smearing of the feet with grease; use of woolen socks, care to keep the boots in good condition and pliable by frequent greasing.

[G. M. B.]

(Continued on page 18.)



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(Continued from page vi.)

### ORTHOPEDIC SURGERY.

#### SUTURE OF TENDON AND LIGAMENT OVER A GAP.

MOSTI (*Policlinico*, Surg. Sec., Aug. 15, 1917) reviews the various methods in use for bridging a gap between tendon and ligament stumps. He gives the detailed history and operation in a case where there was an unbridgeable space between the stumps and patella ligaments. This was in a man of 40 who had received a perforating wound of the right knee from a piece of iron just below and to the inner side of the patella ligament. Intense pain was felt, the pain became worse when he attempted to stand or walk. X-ray examination showed the piece of iron, and the surgeon attempted to remove it under local anesthesia but failed. Arthrotomy was then done, believing the piece of iron was in the joint cavity, but he again failed to find it. The wound was then closed and the patella tendon sutured. The pain and swelling persisted and two months later the patient entered the hospital for the relief of pain. The knee was swollen and tender, on palpation, the pain was worse in the lower left region of patella tendon; active and passive motions were painful and limited. X-ray showed the piece of iron against the tibia at the level of the insertion of the patella tendon. It was successfully removed with relief of symptoms. Some time later the man fell, and in doing so the knee was violently flexed; he felt something give way in the knee, followed by intense pain. He rested for one month with little benefit. On entering the hospital the knee was explored and it was found that the patella tendon was completely torn from its upper insertion on the tibia and there was considerable space between the tendon stumps so that it was impossible to suture them. Mosti then mobilized the upper stump by slitting the patella lengthwise and slipping the anterior half downward until it could be sutured to the lower stump. This procedure proved entirely successful. The halves of the patella were fastened together with a screw. At the end of 20 days there was complete union. The screw was then removed, massage, active and passive motions begun. Thirty-five days after operation the patient was discharged well. [G. M. B.]

### HYGIENE AND PREVENTIVE MEDICINE.

#### THE EFFECTS OF WAR BREAD ON HEALTH.

HUTCHISON (*The Practitioner*, Dec. 1917) discusses the effect of what is known of war bread on the health of the British nation. This bread is made from whole wheat flour along with a certain amount of flour from corn, barley, rice and oats. He discusses the characteristics of these various grains in considerable detail and comes to the only possible conclusion that he has every reason to feel satisfied that this bread is a good and wholesome article of diet containing all the ingredients supplied by pre-war bread in greater variety, and if anything in better proportions. [J. B. H.]

### AN EPIDEMIOLOGICAL STUDY OF LOBAR PNEUMONIA.

SYDENSTRICKER AND SUTTON (*Johns Hopkins Bulletin*, October, 1917) summarize their work as follows: Examination of 100 specimens of sputum from healthy negroes living in the shanties of the Bethlehem Steel Works showed 22 per cent. of pneumococci

(Continued on page 2.)



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(Continued from page viii.)

belonging to fixed types, in contrast to 6 per cent. of a group of our dispensary patients. The number of the ordinary saprophytic Type IV organisms was practically identical in the two groups. The increase in the fixed types was at the expense of the group that does not harbor pneumococci in their mouths. This high percentage of healthy individuals carrying pneumococci of fixed types in their mouths occurred in a community where the percentage of cases of lobar pneumonia due to organisms of fixed types was likewise very high. [J. B. H.]

## PHARMACOLOGY, PATHOLOGY AND PHYSIOLOGY.

### OSSIFICATION IN THE KIDNEY.

PIRONDINI (*PollUnico*, Surg. Sec., Aug. 15, 1917) reports in detail the following unique case which came to autopsy.

A woman of 37 had frequent attacks of pain in the region of the right kidney for four years, with occasional attacks of hematuria, and later entered the hospital for pain in the left kidney. Catheterization of both ureters showed pus from each side. X-ray confirmed the diagnosis of bilateral renal disease. The intense pain on the left side decided him to do a nephrotomy, and a large racemose calculus was removed; soon after the patient died from shock. At necropsy there was found in the right kidney a triangular piece of bone, 3 x 5 mm., imbedded in a cavity of pus. Macro- and microscopic examination showed this to be a complete bone having periosteum, well-formed osseous tissue and bone marrow, but no feature of a tumor. Piron dini has been unable to find any similar case in the literature. [G. M. B.]

## NEUROLOGY AND PSYCHIATRY.

### THE ESTIMATION OF THE VIBRATORY SENSATION.

This interesting article by SYMNS (*Quarterly Jour. of Med.*, October, 1917) gives the results of extensive research into the nature of the so-called vibratory sensation. This is the sensation produced by placing a vibrating tuning-fork on one of the bony prominences of the body. Symns employs a special fork with a device by means of which it can be applied to the body when vibrating at a constant amplitude. The duration of the perception of vibration is now measured with a stop-watch. The author has determined the normal limits of variation for the perception periods at different parts of the body, and also the periods in various neurological diseases. He finds that the duration of the vibratory sensation is abnormally diminished in many cases of neuritis and of tabes which show no definite impairment of the sensations of touch, pain or temperature. Thus, in the peripheral neuritis of diabetes, there was always diminution of the vibration, sensation in the legs, seldom in the arms, while in alcoholic neuritis, both the legs and arms were affected. Lead neuritis differed from both in that while the legs were always affected, the arms showed normal vibratory sense in some of the cases. In all

(Continued on page xii.)

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(Continued from page 8.)

the above conditions the impairment was bilateral, even where the paralysis was one-sided. In cases of local injury to peripheral nerves, however, the impairment was limited to the injured side.

In tabes dorsalis there was almost always marked loss of vibratory sense over the sacrum in contrast to peripheral neuritis which showed normal sensation here except in very advanced cases. There was also impairment of vibration over the legs.

With regard to the nature of the vibratory sense, Symms considers it analogous to that of deep pressure, and shows that it probably is conducted upwards in the cord in the posterior columns near the fibres for touch, crossing to the other side high up in the cervical segment.

This new method of investigating sensation would seem to the reviewer an undoubted advance, since it yields results in cases where the ordinary methods show as yet nothing abnormal. [W. T.]

### OBSTETRICS AND GYNECOLOGY.

#### CESAREAN SECTION SCARS.

SEAULDING (*Jour. A.M.A.*, Nov., 1917), from a review of the literature and a histological examination of four human uteri, concludes that more than 10 per cent. of cesarean scars are defective. The chief cause for the defect seems to lie in imperfect healing of the endometrium. In case the incision is into the placental site, there may be imperfect healing due to degeneration of decidua serotina or the scar may be weakened by the inclusion of decidual tissue in the muscle wall. There is not much evidence to uphold the view that the syncytium attacks the well healed scar, although two such cases have been reported. The placenta is frequently found overlying the weakened scar in cases of rupture. This may produce rupture from retroplacental hemorrhage or may act, on the other hand, to support the weakened scar. Of 75 reported cases, all but one were ruptures in the upper part of the uterus. From this it seems that the extraperitoneal cesarean section carries with it a better prognosis than the classic abdominal operation. Rupture of the uterus is probably produced by the increased intra-uterine pressure forcing a water wedge into the defective scar. Although well healed scars can withstand the strain of future labors, the frequency of rupture after cesarean section is so much greater than uterine rupture from other causes that the indications for section should not include such patients as can just as well be treated by the induction of labor at term, pubiotomy, vaginal hysterotomy, or other well known obstetric operations. [E. H. R.]

### PEDIATRICS.

#### BREAST FEEDING.

RUBEN (*Med. Rec.*, Nov. 10, 1917) gives a very thorough and comprehensive study of this whole subject. The article is not suited for review but is well worth reading by the general practitioner as well as the pediatrician. [E. H. R.]

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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

February 21, 1918

ORIGINAL ARTICLES	BOOK REVIEWS
ACUTE LOBAR PNEUMONIA. <i>By F. C. Shattuck, M.D., Boston, and C. H. Lawrence, M.D., Boston</i> ..... 245	The Healthy Girl. <i>By Mrs. Joseph Cuning, M.B., and A. Campbell, B.A.</i> ..... 269
RECENT TREATMENT OF LOBAR PNEUMONIA. <i>By Thomas F. Leen, M.D., Boston</i> ..... 251	<b>EDITORIALS</b>
RECRUITING NOTES. <i>By Harold W. Dana, Captain, M.R.C., U.S.A., Boston</i> ..... 255	THE MAN WHO STAYED AT HOME ..... 270
THE ARMY SURGEON OF OTHER DAYS. <i>By Howard Dudley King, M.D., New Orleans, La.</i> ..... 258	WAR-RISK INSURANCE ..... 271
<b>CLINICAL DEPARTMENT</b>	PNEUMONIA ..... 271
GONORRHEA IN YOUNG MALE CHILDREN, AND ITS TREATMENT. <i>By Walter D. Bieberbach, M.D., Worcester, Mass.</i> ..... 259	MEDICAL NOTES ..... 271
<b>SOCIETY REPORTS</b>	<b>THE MASSACHUSETTS MEDICAL SOCIETY</b>
BOSTON SURGICAL SOCIETY. MEETING NOVEMBER 5, 1917 .... 262	STATED MEETING OF THE COUNCIL ..... 274
AMERICAN PROCTOLOGIC SOCIETY. MEETING JUNE 4, 1917 .... 265	<b>OBITUARY</b>
	WILLIAM HENRY LATHROP, M.D. .... 276
	CHARLES DEXTER SAWIN, M.D. .... 276
	HORATIO FRANKLIN COPELAND, M.D. .... 276
	<b>MISCELLANY</b>
	RECENT DEATHS ..... 276

### Original Articles

#### ACUTE LOBAR PNEUMONIA.\*

BY F. C. SHATTUCK, M.D., BOSTON,  
AND  
C. H. LAWRENCE, M.D., BOSTON.

IN 1889 Coolidge and Townsend published an analysis of 1000 consecutive cases of lobar pneumonia, comprising all those treated at the Massachusetts General Hospital, from 1822 to that date. This paper presents an analysis of all cases of lobar pneumonia treated at the same hospital from 1889 to 1917, and a comparison of statistics with those obtained from the earlier material.

Our series, as compared with Coolidge and Townsend's, may be said to represent the results of the new régime in medicine as contrasted with the old. Until near the end of the period covered by the former paper, treatment was heroic, and the fresh air and cold air methods had not been introduced. Living conditions, especially those influencing the respiratory tract, were extremely different—crowded trolley cars, factories and tenements; steam heat and poor ventilation, were not the prominent factors in the spread of respiratory infections that they have since become.

Even the nationality of the hospital class has changed markedly since 1889. Immigration had not then reached the great heights it at-

tained prior to the outbreak of the present war, nor were so many different nationalities represented by the incoming aliens.

It is our purpose, in this paper, to determine what the effect of all these changes has been upon pneumonia as seen at the Massachusetts General Hospital, by comparing our findings with those of Townsend and Coolidge, and to bring their work down to the present time.

From the hospital records for the twenty-eight years between the dates mentioned above, we have collected 3,291 cases of lobar pneumonia, while in the sixty-seven years covered by the other paper the total was exactly one thousand cases. These figures immediately suggest that pneumonia is actually increasing in in-

TABLE I.

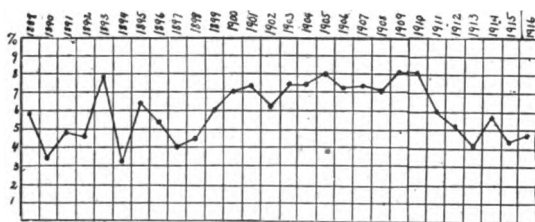
Year	Number of Medical Patients	Cases of Pneumonia Total	Rate
1889	1210	76	6.2
1890	1334	66	4.9
1891	1171	67	5.7
1892	1260	67	5.3
1893	1160	92	7.9
1894	1261	42	3.3
1895	1299	64	4.9
1896	1204	67	5.5
1897	1443	66	4.5
1898	2000	91	4.5
1899	1606	111	6.9
1900	1612	114	7.0
1901	1711	127	7.4
1902	1280	110	8.6
1903	1720	122	7.1
1904	1902	121	6.3
1905	1997	100	5.0
1906	1912	126	6.6
1907	2021	120	5.9
1908	1902	126	6.6
1909	2020	126	6.2
1910	2122	176	8.3
1911	2460	166	6.7
1912	2296	141	6.1
1913	2222	107	4.8
1914	2222	146	6.5
1915	2792	121	4.3
1916	2074	126	6.0

\* A sequel to the paper published by Coolidge and Townsend in 1889, and based on the cases of the Massachusetts General Hospital from 1822 to 1917.

cidence, but it must be remembered that the total number of medical cases admitted to the hospital, and its capacity have greatly increased. The preceding table shows the number of medical cases admitted to the hospital each year, the number of cases of pneumonia admitted each year, and the number of deaths among the latter during the past twenty-eight years.

The ratio of pneumonia cases to total medical cases is shown graphically in Chart I.

CHART I.



Percentage of cases of Pneumonia to total Medical Cases, By Years.

A study of this chart indicates that there has been no very marked change in the yearly incidence of pneumonia, and shows further, that the number of cases in any one year is subject to marked fluctuation. From 1900 to 1910 the average number of cases was higher than in the previous decade; in the seven years since 1910,

CHART II.



PERCENTAGE OF CASES OF PNEUMONIA TO TOTAL MEDICAL CASES, IN DECADES.

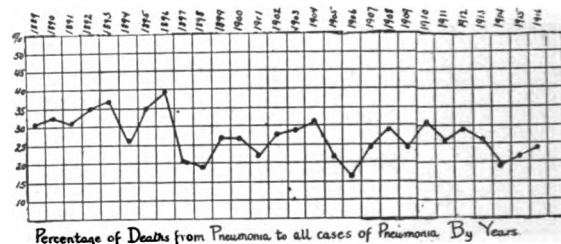
the average number has again fallen. Reference to Chart II, however, indicates that there has been an actual increase in the number of cases of pneumonia, as compared to the number of total medical cases, during the past five decades. In the 1870-1879 period the ratio was 2+, which was not materially different from the preceding periods. Thence it rose steadily, reaching the figure of 7+ between 1900 and 1909, and falling only to 6+ during the last seven years.

It is possible that a fraction of this increase in the incidence of pneumonia, may be due to an increased use of the hospital for the treatment of that disease as compared with others. The percentage of tenement dwellers is constantly increasing, and pneumonia is a disease not advantageously treated in the crowded quarters from which the majority of the hospital pa-

tients come. Further, that class is gradually becoming less averse to going to a hospital, so that it seems possible that an increasing percentage of pneumonia, as compared with other medical diseases, is being sent to the hospital for treatment. It does not seem probable, however, that this is enough to account for the whole increase mentioned above. Nor can it be laid to increased efficiency in diagnosis. Lobar pneumonia is usually not difficult to recognize, and was probably diagnosed as accurately in 1870 as it is today. It must be concluded, therefore, that there is a definite, though not remarkable, increase in the disease, for which no definite explanation appears. Changed conditions of housing, and overcrowded stores, workshops and street cars are probably contributing factors.

Of even greater interest is the question of mortality. Chart III gives the percentage of mortality from pneumonia by years, from 1889 to

CHART III.



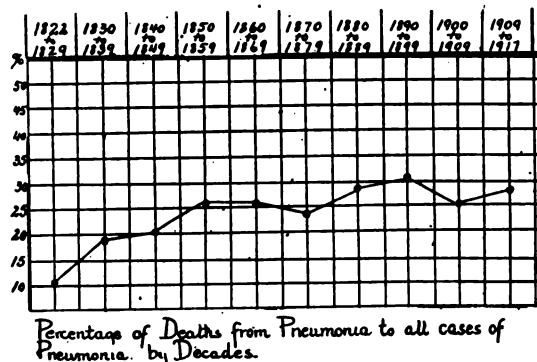
Percentage of Deaths from Pneumonia to all cases of Pneumonia, By Years.

1917. It will be seen that there are marked variations in the yearly mortality rate, the highest being almost 40% in 1896, the lowest about 16% in 1906. In general, the trend is slightly downward—at no time during the past five years has the rate reached a point as high as was maintained during the first five years of the period under consideration. During the past five years, however, the hospital has opened a special medical department for children, with a resultant increase in the number of cases of pneumonia during the period of life when the mortality is low, and this factor must be considered in accounting for the general decrease in mortality during that time.

If the yearly mortality rates are collected by decades, and the results thus obtained compared with those given in Coolidge and Townsend's figures for the period 1822 to 1889, it will be seen that there has been a fairly steady increase in the mortality rate from pneumonia during the past ninety-five years. The rise, however, tends to diminish as time goes on.

Coolidge and Townsend noted this increase from decade to decade in 1889, and in an attempt to explain it, analyzed each case, noting the age, sex, race, previous health, temperance or intemperance in the use of alcohol, and also the presence or absence of complications. They further noted the month of the year in which each case occurred, the site of the lesion in the

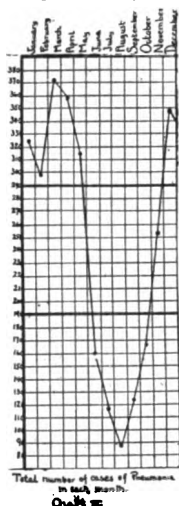
Chart II



lung, and the duration of fever till death or recovery.

A similar analysis of this series of cases has been made, for the purpose of explaining, if possible, differences in the two groups. Each factor will be considered in the same order as that used by Coolidge and Townsend. Chart V gives the total number of cases of pneumonia in each month during the years 1889-1916 inclusive.

CHART V.



There is no significant difference between the curve shown here and that plotted by the previous writers. In their chart, the highest point was reached in April instead of March, and the lowest in July instead of August, but the differences in each case are insignificant. It is our experience, as it was theirs, that the percentage of mortality by months is too irregular to be of any value in explaining the general mortality.

The site of lung involvement shows no particular change during the past ninety-five years. Our table contains combinations of lobes not mentioned by Coolidge and Townsend, such as right upper and middle, and right lower and middle lobes, and for these we are largely beholden to the roentgen ray. But the relation of right to left sided involvement, and the percentage of cases in which both lungs were in-

involved, show similar figures. Our figures for relative frequency of right and left sided involvement are: right, 56.2%; left, 36.4%. Their corresponding figures are: right, 63.9%; left, 34.8%. Our figures show a slightly diminished incidence of double pneumonia, but the difference is only 4.3%.

TABLE II.

Distribution of Lung Involvement in 942 Cases

	Number of Cases	% of Total Sided	Mortality
Left lower lobe	276	29.3	66
Right lower lobe	226	24.0	66
Right upper lobe	111	11.7	27
Both lungs	49	7.4	43
Entire right lung	49	7.4	36
Right lower and middle lobes	49	5.6	17
Left upper lobe	38	5.7	12
Entire left lung	38	5.3	17
Right middle lobe	31	3.8	6
Right upper and middle lobes	19	3.0	7
Right upper and lower lobes	12	1.8	7
Total cases right sided involvement	690	56.2	187
Total cases left sided involvement	248	36.4	87

Mortality, as affected by the site of the lesion, shows but little difference in the two series. The mortality for involvement of the right side is slightly greater in our series than in theirs.

Although the site of lung involvement is no aid in explaining changing mortality, it presents two interesting points for consideration. First, the right side is involved twenty per cent. more often than the left. That this may be due to anatomical factors is suggested by the facts that the right lung is also more frequently involved in tuberculosis, and that effusions into the pleural cavity are more often right than left sided. The difference in blood and lymph circulation to the two sides perhaps accounts for the effusions, while the straighter right bronchus may make infection of the right lung easier than the left.

It is likewise interesting that though the right lung is so much more frequently involved, the death rate for the two sides is practically the same. The reasons for this seem more apparent. Involvement of the left lung imposes a greater mechanical embarrassment upon the heart by reason of the solidification so near it. Moreover, analysis of cases collected during the past five years shows that pericarditis, a complication with high mortality, occurs much more frequently in left than right sided pneumonia. In our series, 70% of the pericarditis was associated with left sided lesions.

The time at which death is most likely to occur during the disease has varied little since 1822. Coolidge and Townsend found that more deaths occurred during the eighth day than any other; in our series the seventh showed the highest figure, but difference between that and the eighth is slight and is insignificant when the difficulty in many cases of accurately determining the onset of the disease is considered.

The duration of fever in the cases that recovered showed the same variation, as may be seen from the table. Again the differences are insignificant. Termination by lysis or crisis was noted in 266 of our cases. Of these 192 ended by crisis, 74 by lysis. Coolidge and Townsend's

TABLE III.  
Day of Death.

	1889-1917		1822-1889.	
	No. of Cases	Percent	No. of Cases	Percent
1st day	1	0.4	0	0
2nd "	2	0.8	0	0
3rd "	5	2.0	7	3
4th "	15	6.0	7	3
5th "	25	10.0	19	7
6th "	27	10.8	14	6
7th "	45	18.0	19	7
8th "	25	10.0	31	13
9th "	24	9.6	20	11
10th "	13	5.2	22	9
11th "	20	8.0	17	7
12th "	12	4.8	10	4
13th "	2	0.8	7	3
14th "	1	0.4	9	4
3rd week	17	6.8	25	9
4th week	6	2.4	7	3
5th week	1	0.4	5	2

figures for 212 cases were: Crisis 128, lysis 84. No definite conclusion can be drawn from these small series.

TABLE IV.

	Duration of Fever, 1889-1917.		1822-1889	
	No. of Cases	Percent.	No. of Cases	Percent
2 days	0	0		
3 "	4	0.7		
4 "	8	1.4	15	2.3
5 "	26	6.3	35	8.3
6 "	57	11.0	55	8.4
7 "	93	18.0	176	17.7
8 "	99	17.3	119	18.2
9 "	55	10.7	88	13.4
10 "	50	9.7	79	12.0
11 "	39	7.7	44	7.0
12 "	23	4.4	29	4.4
13 "	21	4.0	19	2.9
14 "	11	2.1	26	3.9
15 "	8	0.9	12	1.9
16 "	3	0.5	8	0.7
17 "	4	0.7	5	0.7
18 "	5	0.9	2	0.3
19 "	1	0.1	2	0.3
20 "	4	0.7	3	0.4
21 "	3	0.5		
OVER 21 "	13	2.5		1.9

Coolidge &amp; Townsend.

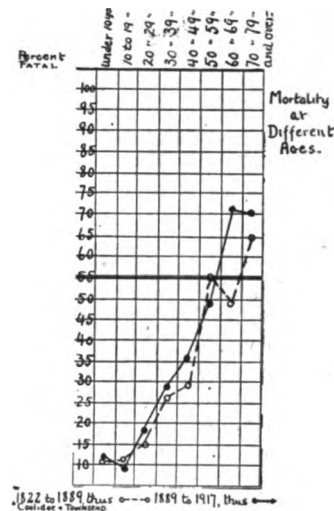
An analysis as regards relative incidence in males and females, shows that the former are much more prone to the disease. Nearly 68% of our cases were in males. In the former series, 72% of all cases occurred in men, and this ratio seems to hold in British private practice. The greater exposure of males to cold, wet, and extreme fatigue, their greater tendency to alcoholic excess and the greater frequency with which men are sent to the hospital, would account for the difference.

TABLE V.

	Men.			Women.		
	No. of Cases	Died	Mortal %	No. of Cases	Died	Mortal %
May 1, 1889 to Jan. 1, 1900	876	101	31.4	166	56	30.1
Jan. 1, 1900 to Jan. 1, 1910	938	256	25.3	446	109	24.2
Jan. 1, 1910 to Jan. 1, 1917	838	141	27.6	261	62	26.2
Total						
May. 1, 1889 to Jan. 1, 1917, 2009-27.8%	2652	501	30.7	873-26.2%	227	26.0

Coolidge and Townsend found the mortality the same in the two sexes. Our figures show a slightly higher mortality for males—30.7% against 26.8% in females. Here again alcohol, and perhaps arteriosclerosis, will explain the difference.

CHART VI.



The factor of age in determining the mortality from pneumonia is more important than any other. As shown by Chart VI, the mortality, after the first ten years, increases markedly with each decade up to the seventh, when it becomes about stationary. In our own series, the mortality is slightly higher in the first decade than the second. In the cases from 1822 to 1889 the opposite was the case. This is probably due to the increased admission to the hospital of children of the poor, among whom general nutrition is not good. Coolidge and Townsend's figures are based on ten cases, of which one died. Our series comprises 476 cases, showing the great relative increase in patients under ten. Of those who died in the children's medical department (these figures are based on 60 cases collected since that department opened) 88% were under one year old, an additional 8.7% were poorly nourished. Subtracting these cases we should find the mortality for the first decade 3.3%, and the mortality rate would be a straight line from beginning to end.

Our figures agree with those of the previous writers until the sixth decade is reached. At this point, theirs fall abruptly, while ours continue upward. The authors of the previous paper explain the break in their line by the statement that 60% of their patients in that decade showed neither complication nor intemperance, and further state that a similar chart, based on 412 cases in their more recent years, did not show the break. It is to be concluded, then, that there is not a diminished mortality from pneumonia in the sixth decade, but the reverse. Indeed it will be seen that the increase in mortality is greater than for any other decade.

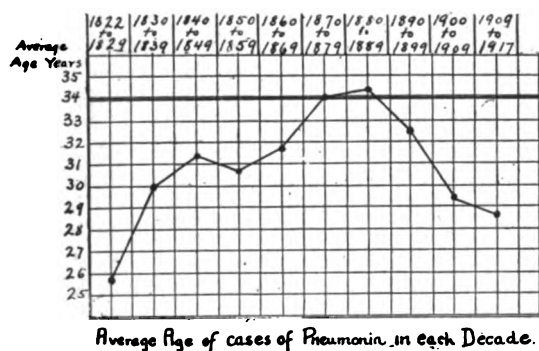
TABLE VI.

May 1 1889 to Jan. 1, 1917.

Age of Patient	No. Cases	% of Total	No. Died	Mortal, %
Under 10 years	478	13.5	66	13.8
10 to 19 "	329	11.8	33	9.1
20 " 29 "	688	22.5	115	18.3
30 " 39 "	680	20.8	169	29.1
40 " 49 "	431	14.0	154	35.6
50 " 59 "	292	10.4	145	49.6
60 " 69 "	100	2.7	72	72.
Over 70 "	48	1.4	34	70.8
Total	2882			

Is there an explanation for this marked increase? We feel that it lies to some extent, at least, in the development of arteriosclerosis as a prominent factor in man's existence at about that time. It is true, of course, that arteriosclerosis is a process of insidious onset and gradual development, but it is equally true that its effects are most marked after sixty. To determine its effect upon the course of pneumonia, we analyzed the cases during the past five years. Ten cases of pneumonia were found which showed well marked arteriosclerosis, according to the records. Of these eight, or eighty per cent., died. It seemed fair to believe, therefore, that it is an important factor in the greatly increased mortality of the sixth decade; and in default of other explanation, the alleged increasing incidence of arteriosclerosis in the community may be advanced as one factor contributing to the increasing death rate from pneumonia. It is probably less important in hospital patients than in private practice.

CHART VII.



Since age is so important a factor, our cases were plotted according to their average age, by years and by decades. No positive conclusions can be drawn from this chart. There has been a steady decline in the average age of patients admitted since 1889. This is partly due to the increasing number of children admitted. The table furnishes no explanation of the increasing death rate.

This conclusion is opposed to that of Coolidge and Townsend, who found an increasing age average from decade to decade, and who believed

it an important factor in accounting for the increasing mortality.

The effect of previous health and temperance of the individual is noted in Table VII. The interesting conclusion to be drawn from this

TABLE VII.

Influence of Previous Health &amp; Habits.

	No. of Cases	Died	Fatal Percent.
1. Delicate	144	55	38.0
2. Healthy & Intemperate	189	80	37.7
3. Healthy & Temperate	368	84	23.0
4. Healthy	161	32	19.8
5. Intemperate	55	29	52.7
Healthy (3+4)	528	116	22.0
Intemp. (2+5)	244	89	41.5

table is that intemperance in the use of alcohol increases the mortality among otherwise healthy individuals until it practically equals that among those of delicate health. That increasing intemperance cannot be advanced as an explanation of the increasing death rate, is shown by the fact that Coolidge and Townsend found 109 intemperate patients in their series, while in ours, comprising three times as many individuals, only 214 were noted. The evidence afforded by these figures is, of course, not very definite, since the possibility of error is great. There is, however, no ground for believing alcoholism to be on the increase among the patients studied. Our mortality figures as influenced by previous health and temperance are essentially the same as those of Coolidge and Townsend.

TABLE VIII.

May 1, 1889 to Jan. 1, 1917.				
Most Common Complications in 2187 Cases of Pneumonia in Order of Frequency.				
Disease	No. Cases	% of Total Number	Died	Mortal, %
Erysipelas	100	3.1	29	29.0
Alcoholism	70	3.2	46	66.8
Acute Otitis Media	81	3.8	7	8.6
Acute Fibrous Pericarditis	80	3.7	27	34
Pleurisy with Effusion	40	1.8	4	10
Pericarditis with Effusion	34	0.97	30	91.6
Typhoid Fever	22	0.85	14	63.6
Jaundice	33	1.0	16	48.5
Acute Arthritis	19	0.62	8	42.1
Acute Endocarditis	17	0.64	16	94.1
Abscess of Lung	18	0.60	7	38.9
Phlebitis	14	0.44	1	7.1
Dilatation of Heart	10	0.31	10	100.0
Pulmonary Tuberculosis	11	0.34	8	72.7
Mononucleosis	11	0.34	11	100.0
Post-febrile Exanthema	8	0.30	0	0.0
Acute Nephritis	6	0.18	0	0.0
Pneumothorax	2	0.08	0	0.0
Pyopneumothorax	2	0.08	2	100.0
Empyema of Lung	1	0.04	1	100.0
Subdiaphragmatic Abscess	1	0.04	0	0.0
Total No. Cases (May 1, 1889 to Jan. 1, 1917)	2187		200	9.2
No. Cases with Complication, Acute and Chronic	600		200	33.3
Uncomplicated Cases	1587		80	5.1

21.7% of 2187 cases had complications, acute and chronic.

The frequency with which various complications of pneumonia occur, and their effect upon the outcome of the disease, is shown in Table VIII. The list does not comprise all complications found. For the sake of conciseness, those complications which had or might be expected to have no influence upon the course of the disease, have been omitted from the table. All complications, however, were used for purposes of obtaining the final figures.

It is extremely hard to compare our table with that compiled by Townsend and Coolidge. In their series of 1000 cases, empyema was noted six times, with a mortality of 50%. In our series of 3000 cases, empyema occurred 100 times with a mortality of 29%. Endocarditis, found 17 times in our series, is not mentioned in theirs. The total figures show, however, that 16.1% of their cases had complications, acute or chronic, against 21.7% in our series. Probably some at least of this increase must be ascribed to increased accuracy of the hospital records, as it is hard to believe that such complications as endocarditis, jaundice, and otitis media did not occur before 1889. The mortality in our series of complicated cases was 43.4%; in the former series, 36.6%. It would be unsafe, however, to ascribe to this factor the increased mortality from pneumonia, for refinements in diagnosis, both ante and post mortem, have undoubtedly swelled our list of complications, while the mortality rate for almost all the complications which can be compared in the two periods has diminished since 1889.

In 641 cases of pneumonia in the last five years of our series, forty-two, or 6.5%, had had previous attacks of the same illness. Of these, fourteen, or 33.3%, died. Thirty-six of the series had had one previous attack; ten of these died. Three had had two previous attacks; two of these died. Two patients had had three, and two, four previous attacks. There was no mortality in these two groups. None of these cases happened to be complicated, delicate, or alcoholic. It appears, therefore, that previous attacks of pneumonia slightly raise the mortality rate, but our series is too small to be more than suggestive.

TABLE IX.

May 1, 1889 to Jan. 1, 1917. (Inclusive).

	No. Cases.	Fatal.	% Fatal.
Americans (Includ. Canadians & Colored)	1610	428	26.6
Irish	499	173	34.6
Other Foreigners	779	170	21.8
Not Recorded	39	38	96.6
English	99	38	38.1
Included			
Italians	289	46	15.8
in			
Jews	211	40	19.9
"Other Foreigners"			
Germans	36	13	34.2
Swede	40	10	25.0
Scotch	22	8	36.4
Canadians (born abroad.)	156	46	29.5
Colored	42	17	40.4
From May 1, 1900 to Jan. 1, 1917.			
Americans (Exclud. Canadians & Colored)	1088	269	24.

The influence of race upon mortality remains to be considered. In our series, 35.3% of the patients were born in the United States, and this class of patients showed a death rate of 24%. Seventeen per cent. were Irish, with a death rate of 34.6%. Fifty-one per cent. were classed as "other foreigners" with a mortality of 21.8%. In Coolidge and Townsend's series, 46.3% were Americans, with a mortality rate of 22%; 37.1% were Irish, with a mortality rate of 25%; 11.9% were classed as "other foreigners" with a mortality rate of 30%. Since 1889,

therefore, the mortality rate among Americans has increased 2%, among the Irish 9.6%, and among "other foreigners" it has diminished 8.2%. The relative number of Irish admitted has diminished markedly, that of "other foreigners" has sharply increased. Among these latter in our series, the Italians and Jews were the most numerous, and had the lowest death rates—less than 19%. The former were almost all young, vigorous men. The low mortality among the Jews is probably another example of their racial resistance to pulmonary disease. The increase in the "other foreigners" group should be expected to lower the death rate, and may account somewhat for the drop noted during the last seven years in Chart III. Apparently, however, it has not made its influence felt upon the rate calculated by decades, though it may explain the slight fall noted during the past two such periods.

It is interesting to note the susceptibility of the Irish race to pneumonia as well as to tuberculosis. Malnutrition and alcohol would seem to be contributing factors. It may also be interesting to note the number of different races represented among "other foreigners," some twenty-five in all, and collected during the past five years, and from the pneumonia patients only.

TABLE X.

Nationalities Represented among Pneumonia Cases in Past Five Years.

Americans	Scotch	Danes
Canadians	Polish	S. Americans
Irish	Portuguese	French
Russian Jews	Turkish	Norwegians
Italians	Austrian	West Indians
English	Finnish	Rumanians
Greeks	Ukrainian	Armenians
Germans	Syrians	New South Wales
Swedes		Total 25

To sum up the probable effects on the mortality rate of the factors thus far considered, it may be said that since 1889, the deaths from pneumonia have increased somewhat faster in males than females; that the age of the patient has practically the same effect now that it had then; that intemperance as a factor in the mortality has not increased among the patients in our series, and that the relative number of intemperates is smaller in our series than in Coolidge and Townsend's. The same is true of delicate cases, while the relative number of complicated cases has probably not increased actually to any great extent, though more complications are noted since 1889 than formerly.

The death rate by decades for all patients has shown practically no rise since 1889. During the past seven years there has been a slight decline, caused probably by the steadily increasing numbers of young foreigners among whom the death rate is low.

The increased death rate among the Irish and Americans may be due in part to alcohol, especially among the former, and in part to the more rapid vascular aging of the present day.



If age be as important as our tables indicate, and if "a man is as old as his arteries" then vascular degeneration, which is believed to be increasing at present, may account for the increased death rate from pneumonia in these latter decades, as compared with the first half of the previous century. The apparent arrest during the past twenty years of the upward trend of the mortality curve may be due to treatment, or can be explained by the change in the make-up of population.

#### CONCLUSIONS.

1. In the four thousand odd cases of lobar pneumonia treated at the Massachusetts General Hospital, from 1822 to 1917 (inclusive), the mortality has gradually increased from 10% in the first decade to 28% at the present time.

2. Since 1881 there has been no significant change in the death rate.

3. The number of cases classed as delicate or intemperate has been decreasing during the same period.

4. The apparent increase in complicated cases is probably due to increased accuracy of diagnosis and recording.

5. The relative number of foreign-born patients is increasing, the mortality among them diminishing.

6. The death rate among American-born patients has increased slightly, as has the mortality among men as compared to women. This may be due to a corresponding increase in vascular diseases during the period studied.

7. The mortality rate for pneumonia in the entire series has shown no permanent important change.

8. Treatment has done nothing toward diminishing the mortality from pneumonia in the past ninety-five years. Bleeding, purging, fresh air—the result has been the same. Of particular interest is the evidence offered by our figures upon the effect of alcohol. Its habitual use, during health, in more than moderate amounts, is shown to diminish the patient's chances of recovery. But the mortality rate among those patients who were given large amounts of alcohol during their illness, is no higher than among those given no alcohol and large amounts of fresh air. Our figures do not indicate that alcohol is harmful to those sick with pneumonia. They suggest that the effect of the drug varies with the conditions under which it is given, and that it is not poisonous to those who have high temperatures and are taking insufficient nourishment.

9. No change is to be expected in the results of treatment until a specific is discovered which will neutralize the toxins of the pneumococcus.

10. The results from the serum now in use are encouraging, but limited, and until its use becomes accepted, the treatment of pneumonia must be that best suited to the individual. No routine treatment has been justified by its results.

## RECENT TREATMENT OF LOBAR PNEUMONIA.\*

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FROM a pathological standpoint of lobar pneumonia, we all are aware of its definite stages of pulmonary congestion, consolidation, and resolution, or some consequent local metastatic infection. As well clinically, we are familiar with its clean-cut, self-limited picture, ending in recovery or death, and that no longer do we consider it simply as a lung infection, no more than we do typhoid an infection of the intestine alone, but as a general constitutional disease, with local manifestations. But when we come to its treatment, which is only symptomatic and supportive, and difficult and doubtful, there we are halted for a cure. Why does one of our athletic, healthy young men die in a few days of the disease, and a weakling, physically, recover? We don't know how infection takes place, how the organisms are related to the lesions and symptoms, how the patient recovers, and what makes the possibility of recovery and cure. Some of these questions are slowly being solved on theoretical, biological, and experimental grounds, and the work already done experimentally and biologically by investigators, particularly at the Rockefeller Institute, headed by Cole, is the most illuminating, tangible, and progressive that has ever been given to physicians in this most important, infectious disease, where we have been practically helpless. We shall consider only the newer methods of treatment and the grounds on which they are based.

When I speak of lobar pneumonia, I mean pneumonia of one or more lobes, or a part of a lobe, where pneumococci are found in the lesions; for, as you know, occasionally the bacillus of influenza and the bacillus pneumoniae may be the cause of similar lesions as well. A question has arisen as to whether the diplococcus pneumoniae is the primary cause of the disease, for a diplococcus not differentiated from it is found in lobar pneumonia, and organisms with identical characteristics seem to be normal inhabitants of the mucous membrane of the throat and mouth, it being present in 226 out of 398 examined. But their association with the lesion and their frequent invasion of the blood show they play a strong part in the process and probably the most important in prognosis, just as streptococci do in smallpox and scarlatina, the natural infection being due to specific etiologic agents. Experimentally, Wadsworth in 1904, in a series of rabbits caused lobar pneumonia by pneumococci, and at present this view has been generally accepted.

On reviewing the history of the pneumococcus, we must remember that it is not, as for-

\* Read before the Waltham Medical Club, December 6, 1917.

merly thought, to be one race or strain, but a species of many races. Kruse, in 1891, identified 84 different strains or races morphologically, culturally, and in virulence. The next important landmark so to speak, was the discovery by Schottmüller, ten years ago, of what he called the streptococcus mucosus, associated with lobar pneumonia, having as characteristics a very large capsule and certain biological features, one of which is the formation of a sticky, glutinous exudate. As it was more related to the pneumococcus than the streptococcus, it has been called the pneumococcus mucosus, causing a very severe and fatal pneumonia with a mortality from 45 to 66%. Apart from this particular strain, all pneumococci were thought to be generally the same until Neufeld and Händel of Germany, in 1912, first laid the foundation upon which all later work was done. They tested a so-called univalent serum against various races of pneumococci. In experiments on mice, it protected against 15 strains, and against other strains the serum had practically no effect. These atypical strains were not serum-fast, since the serum obtained during convalescence from one of the patients from whom one of these organisms had been isolated, protected mice against the homologous strain and also against one of the atypical strains, but did not protect against the typical strain. They then produced an immune serum against one of the atypical strains, to see whether all atypical strains could be affected by this immune serum, but found this not to be true. Later, they found the second immune serum which protected against only three of the atypical strains isolated by them, but failed to protect against three other strains. These latter three strains they further showed to be individual in their reactions, and not having access to many pneumonias to obtain cultures, they could not determine the frequency of the atypical types, nor study the biological groupings of the organisms.

The report of this important work was the stimulating influence of the Rockefeller Institute to study all races isolated from lobar pneumonia; and Dochez and Gillespie immunized rabbits to each race, studying their immunity reactions. They found a number of the races were similar and that all this group agglutinated by the serum obtained by the immunization of animals to one of them, and such a serum protected mice from infection with any one of the group. A second smaller series was also found to have common immunological characteristics, but these characters were entirely distinct and different from those of the first group. Finally, a considerable number of races were found with no common immunological features, each race appearing distinct. These facts corroborated the work of Neufeld abroad but were based on more elaborate and extensive research.

To identify these groups or types, the first described was called Type, or Group I; the second smaller series, Type II, the pneumococcus

mucosus of Schottmüller, Type III; and the group of pneumococci, having no common immunological characteristics,—a heterogeneous group,—Type IV. Under Type II, further subdivision of a few strains have been very recently made: IIa, IIb, IIx, with the details of which I shall not take up your time. Therefore, the etiological agents in all cases of pneumonia are not the same, for there are many races or kinds of pneumococcus causing the disease, types of a single species. Similar examples we see in typhoid fever, in the differentiation of paratyphoid A and B, culturally and immunologically different, the differentiation of meningococci, and within the year, the typhoid bacillus has been differentiated into more strains, accounting for the non-protection of inoculated patients with typhoid vaccine of one strain, the patient coming down with typhoid fever from another strain. Already is it well known that bacillary dysentery is not due to one strain, but to any one of four,—the Shiga, Flexner, Strong, or Y, and only the anti-serum of that particular infecting strain can cure the patient. Recently, Noguchi in his work on the *Treponema pallidum* of syphilis has differentiated several strains of that organism. The clinical manifestations of infection by these different groups of pneumococci are not identical, certainly as regards severity, as shown by mortality statistics.

## MORTALITY.

	ROCKEFELLER (COLE)			PENN. HOSP. (LEWIS)
Cases due to group or type	Cases	Deaths	Per Cent.	95 CASES
I. ....	57		38%	33%
II. ....	44		30%	27%
III. ....	17		11%	8%
IV. ....	32		21%	36%

## INCIDENCE OF THE DISEASE.

	ROCKEFELLER			PENN. HOSP.
Cases due to group or type	Cases	Deaths	Per Cent.	Per Cent.
I. ....	28	7	25%	29%
II. ....	25	9	36%	27%
III. (Pneumococcus mucosus) ...	17	8	47%	67%
IV. (Heterogeneous) .....	33	2	6%	11%
Total No. of cases	103			

## STILLMAN.

Past five years at Rockefeller, 454 cases of lobar pneumonia.

Cases due to group or type	Cases	Per Cent.
I. ....	151	33.26%
II. ....	133	29.29%
IIa. ....	6	1.32%
IIb. ....	4	0.88%
IIx. ....	9	1.98%
III. (Pneumococcus mucosus) ...	59	12.99%
IV. (Heterogeneous) .....	92	20.26%

From a prognostic standpoint, the determination of type alone is of considerable importance. Type III is the least frequent but most

severe, with a mortality from 45 to 66%. Types I and II are less severe but most frequent, with a mortality of about 30%, and Type IV very mild and fairly frequent in incidence, with a mortality around 15%.

Perhaps what I have said already, you may consider is only for the bacteriologist and of no importance to us physicians and our patients. Certainly in treatment of patients with pneumonia, all possible means of stimulation and all known methods for increasing the natural powers of resistance by non-specific measures should be employed, but the progress made in specific serological work is what I want to draw particularly to your attention from the curative standpoint, and a knowledge of it and its application to our cases determines a lessening of our high mortality in lobar pneumonia. From present knowledge, it would appear that the growth of bacteria in the blood is the most serious part of the pneumonic process, and it seems that this, at least, is influenced by the appearance of circulating antibacterial substances. Since 1891, immune serum was made, but proved very inefficient, so much so that in 1904 Anders collected 535 cases of pneumonia treated with serum, and he reported there was no justification for its use. Why it failed we know now, since a pneumococcus immune serum is effective only against the type of organism used in the process of immunization. If, for instance, immunization is carried out with organisms of Type I, judging from experimental studies, it will have no effect on any infection to one of the other types of pneumococci. The same is referable to a serum produced by the injection of pneumococci of Type II. If immunization is carried out with one of the organisms of Type IV, the serum can have no effect on any infection except that due to the same race. In other words, the serum must be univalent and not polyvalent.

To render a serum useful in any type of pneumonia, it is necessary to produce one with high protective power against the type of organism concerned, to have a satisfactory method of standardization of such serum, and to have a method for quickly determining the type of organism in each case. Sera of high protective power against organisms of Types I and II have been produced by the immunization of horses by properly spaced doses of living pneumococci. No satisfactory protective serum for Type III has been made, and the use of one in this type of infection is without justification. As Type IV is composed of strains each immunologically different from the other, no one serum can be made for all the members of this group, but each organism can produce an active immune serum for its particular strain. For the standardization of the immune serum mice have been used, and a method for the rapid determination of the type of organism has been employed. This is important to clinicians and must be carried out in every case to determine whether the infecting

organism is amenable to immune serum. A few sputa are collected in a clean receiver, or if no sputum may be had, a vein is tapped, or the area of consolidation is punctured and the blood or sputum, after being emulsified by the bacteriologist with sterile salt solution or bouillon, is injected intraperitoneally in a mouse, it being an animal very susceptible to pneumococci. Four or five hours later, the peritoneal cavity is washed out with salt solution and the exudate cells are removed by slow centrifugalizing, and the bacteria from the supernatant fluid by rapid centrifugalization. The bacteria are washed in salt solution, and this salt solution emulsion is tested for its agglutinative power by adding equal amounts of it and Type I serum, and likewise of it and Type II serum. If within one-half hour the organisms in the first mixture agglutinate, it is a strain of Type I, and its immune serum given intravenously; or if it is agglutinated by Type II serum, then it belongs to that type and No. II serum must be given. Therefore, the type must always be determined and immune serum in amounts of 80 to 100 cc. given intravenously every 6 to 8 hours till the patient's condition changes.

Generally, after giving the injections, a reaction occurs, the temperature usually rising and then falling, except in fatal cases, not necessarily remaining low. It shortens the course of disease, the patient feels better, and intoxication lessens. The serum causes increased agglutinins in the blood, which may be demonstrated three minutes after injection. Where the administration of subsequent doses has not led to a prompt increase of agglutinins in the blood above the previous level, the fall in temperature has been longer delayed, and more serum has been required.

In fatal cases there is an increased invasion of blood by pneumococci and extension of the local lesion, and recently it has been determined that large amounts of soluble inhibiting substances in the blood preventing the action of immune serum and being so large in amount, that no practical amount of immune substances can neutralize them. In such cases the serum may prolong life, but the infection and intoxication may be so great at the start that although the infection may be kept down by the serum, the intoxication cannot be removed, the patient succumbing to this. Hence the importance of giving very large doses of immune serum at the beginning is apparent.

It is impossible to produce a serum against Type II pneumococci to be as active in the test tube, or in the living, as is the serum against Type I organisms, for the horse serum against Type I infection is of such a strength that 0.2 c.cm. will regularly protect a mouse against 0.1 c.cm. of virulent culture, and it has been impossible to produce an immune Type II serum of any greater activity than that 0.2 c.cm. will protect the mouse against 0.01 c.cm. Moreover, the active Type I serum usually causes agglut-

ination of homologous organisms in dilutions of 1-400 or over; the Type II serum usually causes agglutination in dilutions no greater than 1-200.

During infection not only must efficient immune substances be added to bring about a concentration sufficient to sensitize all the bacteria, produce their agglutination, opsonification, etc.; but in addition there must be a sufficient amount administered to neutralize any soluble substances present in the serum, which has the property of neutralizing and fixing the immune substances. The nature of these fixing substances is not positively known. But Dochez and Avery's demonstration, in pointing out the production of precipitable substances in the blood and urine of infected patients and animals, makes it possible. They are responsible for the fixation phenomena. This substance is a precipitin, which early in the growth of the pneumococcus is formed as a readily soluble substance, diffusing into the culture medium; and in human and animal infections, is present in the circulating blood, whence it passes through the kidneys into the urine. It is not yet certain that this substance is responsible for the intoxication that accompanies lobar pneumonia.

The precipitin reaction may be demonstrated in the urine of infected animals or pneumonic patients, even as early as 12 hours after the initial chill, whence a marked precipitate occurs by mixing it with the serum corresponding in type with the organism with which the animal or patient was infected. This specific substance is not destroyed by boiling, and is of protein nature. This reaction is found in pleural fluids, pericardial exudates, and the spinal fluid of pneumococcus meningitis. The amount of precipitin substance in the urine seems to be a measure of the severity of the infection, for the mortality is high when it is present, and most recover when absent. This specific precipitin test in the urine is of considerable prognostic value. These observers, furthermore, believe that this substance bears some relationship to the property of capsule development; for Type III the mucosus organism possessing the largest capsule forming most of this substance; Type II, which has smaller capsules, producing less; and Type I, having small capsules, still less, and very little if any in Type IV.

If the patient is treated early, before large amounts of the fixing substance are present, a moderate amount of serum may be sufficient, even though the grade of blood infection be considerable. On the other hand, if the pneumonia has continued for a considerable time and large amounts of the soluble fixing substance are present in the blood, the amount of serum may be very large; and to repeat, though the infection may be checked, the resulting intoxication destroys the patient. Hence you see how important it is to treat very actively at the start in order to neutralize all these substances and

entirely and immediately to overcome the disease.

As a result, Cole advises the treating of all patients with Type I infection with large initial doses and to repeat every six to eight hours as long as may be necessary. It is possible that the Type II serum is less effective than No. I serum, not only because its concentration of immune bodies is less than Type I serum, but also because the power of pneumococci of this type to produce fixing substances is more highly developed than is that of pneumococci of Type I.

As after the injection of any foreign serum, there results more or less anaphylaxis, the usual serum sickness, in 10 or 12 days, and it may be acute even after one small dose in susceptible persons, causing suffusion of the face, respiratory difficulty, and vomiting. If this occurs while the serum is being slowly administered, it should be discontinued and in 4 to 5 hours a somewhat larger dose tried again. Progress is being made on concentration of the sera, the immune bodies being contained in a part of the globulin fraction of the protein. As a result, smaller doses of horse serum will be given and less serum sickness will occur. The random employment of immune serum and vaccines is to be frowned on, since the future usefulness of anti-pneumococcus serum depends upon our careful determination of its use in proper cases with organisms homologous to the serum used. Suffice it to say, that the treatment of pneumonia due to Type I organisms by the homologous serums has reduced the mortality of this type of infection from 30% to 8%. This speaks well for the future, and Cole suggests that a polyvalent serum for all pneumonias is possible and will be produced later.

Is there a medicine that acts specifically in the disease as salvarsan does in syphilis, and quinine in malaria? Morgenroth, and his associates, in 1911, while working on various organic quinines discovered that one of them, ethylhydrocuprein or optochin, exerted some protective and curative action on mice infected with pneumococci and that in the test tube, in weak solutions, these organisms were destroyed. With this as a basis, much progress has been made since grouping of the pneumococci was determined. Moore and Chesney have reported 32 cases treated at the Rockefeller Hospital in conjunction with allied experimental work. To cure pneumonia or pneumococcal septicaemia with this drug, there must be produced a pneumococidal action in the blood serum, to maintain it as constantly as possible over a period of time sufficiently long to insure the destruction of all the infecting pneumococci, and the concentration of the drug in the body to be harmless to any part of it. These have been pretty well fulfilled. It has a positive bactericidal action on the organisms in the blood and should be given as early as possible in the disease on account of the fewer organisms in the blood. But those in the lung lesions apparently are not af-

fects, as they are mechanically protected by the exudate from the action of the blood. The doses must be large at first to prevent the organisms from acquiring a condition of resistance or "fastness" to the drug which, if occurring, makes later large doses of no avail. This has been shown experimentally to be so, for cultures, by slowly increasing doses for 10 to 12 days, could grow in comparatively high concentration from the drug. The best method of administration is by the mouth, as doses so small as to have little bactericidal action when given intravenously, cause serious toxic symptoms, and subcutaneous doses cause much discomfort by painful infiltration of the tissues. Optochin hydrochloride (Merck) given by mouth in capsules is absorbed so quickly that there is a rapid appearance of the bactericidal action in the serum. For the average person of 135 pounds (62 kgm.), 1.5 grams (25 grains) should be given in 24 hours to cause bactericidal action; or at least 0.024 gm. (grain 1-3) per kilo of body weight per 24 hours. The first day an initial dose 0.45 gm. (grains 7½), and every three-hour intervals thereafter 0.15 (grains 2½), for seven doses; and subsequent days, ten doses of 0.15 gm., each at 2½ hour intervals. Camphor has been shown to diminish the curative effect of optochin and should not be used. No particular diet is necessary. It is a white powder, soluble in distilled water but not in salt solution. Experimentally it has been found that 3½ hours after giving 0.5 gm. of the drug, it is possible to detect the specific inhibitory action in the patient's blood; it is absorbed faster than it is eliminated in the urine and there results a positive balance in the body. Fluid aspirated after death from a pericardial sac was found to be sterile and to have a bactericidal action on pneumococci, showing it passes through serous surfaces. On account of lack of knowledge of its proper dosage, some serious toxic symptoms were reported, but recently they have been minimized to a great degree. They are principally referable to the eye and ear. Vomiting has been reported, due probably to the extremely bitter taste. Ringing and roaring sounds in the ears, and partial deafness, transient in type, disappear when the drug is stopped. The eye symptoms are more serious, and out of 787 treated cases which have been reported, 4½% have had transient amblyopia or amaurosis. Oliver reports one case of permanent, almost complete blindness, the patient receiving 5 grains (0.3 gm.) every three hours, the total amount being 7.7 gm., greater doses than that usually given. In all other reported eye changes, discontinuance of the drug cleared up the symptoms. Dilatation of the pupils suggesting some amblyopia, should be watched for, and it is important that ophthalmoscopic examination be done often to determine any eye changes, and if any found, the drug be diminished or discontinued. The more the daily dose is subdivided, the less frequent are the visual disturbances.

Leschke and others report favorable results from optochin treatment in pneumococcal septicemia. At Rockefeller there was no considerable shortening of duration of the disease under its use. In 787 reported cases treated with the drug, there was a mortality of 12.96%, and in Moore and Chesney's corrected series 19%, where the mortality expected was calculated to be 33%. In all these cases empyema occurred in 1.9%. These figures are encouraging, and even if the drug can't destroy all the pneumococci in the infected area when present in the blood in a concentration sufficient to produce bactericidal action in the serum *in vitro*, nevertheless, if it can prevent a spread of the disease process to healthy lung and prevent septicemia, or metastatic complication, its use may be helpful, as the involvement of hitherto healthy lung constitutes great danger to the patient.

The usage of optochin and anti-pneumococcus serum simultaneously in Group II pneumonias, since the serum alone was disappointing, has been shown by Moore to give markedly increased protective value to the serum. This would seem to suggest that in the specific treatment of pneumonia, perhaps even more favorable results may be expected from the use of optochin and the type of homologous anti-serum, than by either of these remedies separately. Time and experience may make us change the dosage and value of this drug, but to repeat the statistics as quoted, of 787 cases of lobar pneumonia treated with it, with a mortality of 12.96%, with an expected mortality of 30%, surely makes it worth while for our study and consideration. Furthermore, Cole's recent report of 72 consecutive cases of Group I pneumonia treated with a corresponding serum intravenously, with a mortality of 8.3%, whereas among untreated patients in this group the death rate was 25%, bodes well for the future cure of this most important infection. There are many other questions in pneumonia which could be discussed from recent literature with great profit, but if I have stimulated you to study and consider further anti-pneumococcus serum and optochin hydrochloride, this little talk will not be in vain.

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### RECRUITING NOTES

BY HAROLD W. DANA, BOSTON,  
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It is not my intention to offer these few suggestions as necessarily representing anything new in medicine, and certainly to most trained military physicians, most of the things here discussed may seem to be a matter of course. Personally, I am not a surgeon nor an orthopedist, so that what I have to say in these fields will not be of interest to specialists along those lines. What I have to present are the things which have impressed me as a newcomer into the service, during six months' work as an examiner

of recruits for the Army, and cover what have seemed some of the more difficult points for the general practitioner to decide.

For the Army the Adjutant General has fixed certain standards of weight, and for the Draft Boards the Provost Marshal General has fixed other and similar standards. These tables of weight give a normal minimum weight, from which the examining physician is allowed certain discretionary deductions for each height. This final minimum weight is to be accepted only in those cases where the examiner considers the candidate thoroughly sound in other respects. If we consider that 90% or more of all adults have had tuberculosis in some form at some time during life, and that a large proportion of all chests show some signs of a past or present tuberculosis of the lungs, this seems to me one of the important considerations in deciding whether or not to allow a candidate who is below the normal weight for his height to be accepted for service. If a man be of good weight the presence of dulness or of harsh or bronchial breathing at either apex without symptoms and without râles, is of no importance, probably; certainly we cannot afford to consider it as any disqualification. On the other hand, such signs would influence me against accepting a man who was much below the normal weight. So far as I know, there is no weight in excess of the standard, which precludes the use of any man for some branch of the land service, provided always that he is not too obese, is active, and has feet strong enough to stand up under his weight. This question of strength of feet is usually the deciding factor as to the acceptance of a man above 190 pounds in weight.

Since other conditions than tuberculosis may cause harsh, high-pitched inspiration, and crepitant râles, it may be advisable in some cases to have a re-examination at the end of a week. It is perfectly practicable, when the rush of work is not above the ordinary, to take temperatures on suspected cases, often with suggestive results. Again, since blood pressure determinations are a routine procedure in all candidates for commissions in the line of the army, it is feasible to take the blood pressure in phthisis suspects. Personally, I feel that a low systolic pressure, say below 120, with a pulse pressure below 25, is suggestive of phthisis and in any case indicates a vitality or cardiac competency insufficient for the service.

It was a great surprise to three of us taking routine blood pressures on a group of men under thirty years of age, examined for line commissions, to note the number of tests giving 140 and 150 mm. systolic readings, sometimes repeated in two or three tests in the same person at different hours or on different days. These were all in men who showed nothing in the urine. Several men, indeed, in this group of young men gave systolic pressures of 160 and 170. I am inclined to believe that in some at least of these cases ex-

citement was a factor in producing this increase of pressure.

Another fact which I have found to be not uncommon in men showing nothing else abnormal, is the occurrence of high-pitched inspiration without other signs, at the base of the left lung behind. The cause of this I have been unable to determine.

Upon what grounds shall one decide whether the applicant in question has a functional heart murmur? In the instructions issued by the Adjutant General, and even more fully in those given to the draft examiners, stress is laid upon the importance of secondary signs, such as enlargement of the heart, edema, cyanosis or dyspnea, the presence of secondary signs being considered essential to a diagnosis of organic disease. Richard Cabot has always taught his students that in order to make a diagnosis of mitral regurgitation, there was necessary, in addition to the systolic murmur, the presence of either an accentuated pulmonic second sound, or proof of enlargement of the heart, or both. Furthermore, there has always been great comfort to me in doubtful cases, to find the murmur propagated to the axilla or to the back. When the systolic murmur could be heard in the back, I felt assured that there was an organic lesion. Recently I have seen two recruits in whom the x-ray shadow of the heart was not enlarged, and in whom the electrocardiogram indicated the absence of any organic disease, but with a murmur which was plainly audible in the axilla and in the back. Since then I have seen two other cases in which there was no enlargement of the heart to percussion, with no dislocation of the apex downward, with no increase in the pulmonic second sound, but with a systolic murmur loudest at the pulmonic area, heard at the apex and transmitted to the axilla and to the back. Such cases as the last are quite common among the large number of men whom I have examined in the past six months and are very unsettling to one's preconceived ideas as to the signs of valvular heart disease. It has been suggested to me that such cases as I have cited represent congenital heart disease, and this may very possibly be the explanation of cases where a murmur is transmitted to the back, without enlargement of the heart or accentuated pulmonic second sound. If this be the case, however, then congenital heart disease is commoner than I have been accustomed to believe. While I am willing to admit that a loud murmur at the pulmonic area, best transmitted to a point related to the root of the lung in the back, may in some cases be explained as being of auricular origin, which is the view of some observers, it does not seem to me that this explanation can assume a normal mitral valve;—and I do not feel that this theory covers the murmurs heard at the apex, which are transmitted from the apex, to a point in the back corresponding to the level of the apex. In these questionable cases, the apparent myocardial effi-



ciency, as evidenced by testing the effect of work upon the pulse rate, was normal. Of one thing, at least, I am certain, and that is, that these men with such murmurs as I have described, without cardiac enlargement or increased pulmonic sound, are physically fit for active duty in the army, and have, for any practical purpose, essentially normal hearts.

During the past months, I have seen three cases in which the heart was enlarged to percussion, in which there was a systolic murmur at the apex transmitted to the back, and in one of them there was a dislocation of the apex beat downward. Neither the fact that the electrocardiograph was said to show the absence of a valve defect, nor the statement that the x-ray proved the absence of cardiac enlargement, has satisfactorily disproved the diagnosis of mitral regurgitation which I made in these cases. It does not seem to me that the electrocardiograph nor the x-ray is any more infallible in heart disease, than we know to be the case as regards the x-ray in lung and gastro-intestinal work. Personally I still cannot believe that a cardiac murmur is transmitted to the back, without some organic change from the normal, either in the shape, size or number of the cardiac orifices, or in the valves. To my mind, having the candidate lie down does not give any material aid, in most cases, in differentiating between an organic and a functional murmur.

The question of tachycardia as an indication of valvular or myocardial disease, and the "work test" as mentioned above, are in my opinion of relatively little use except in the stolid, unemotional or bovine individual. For instance, doctors and dentists whom I have examined, almost invariably have a high pulse rate, and this is also true of a large proportion of candidates for commissions. While in theory it is true that when a rapid, nervous heart is put under the strain of added work it will steady and slow down, in practice this does not usually seem to be a fact. Hence while tachycardia is set down in the regulations as a cause for the rejection of recruits, and probably quite correctly, as relating to the class of men enlisting in peace times, it would not seem to me to apply to a considerable number of candidates for the army at present. In any event, considerable judgment must be employed in estimating the importance of a rapid heart in each individual. On the other hand, I feel sure that in some cases, the only remaining indication of a previous endocarditis, where the murmur, as so frequently happens in the case of children, has disappeared, is this tachycardia or the presence of marked excitability under emotional stimuli. In this connection, I do not mean to say that many of these mitral leaks of childhood do not clear up absolutely, leaving no signs nor symptoms of any sort.

Supposing that one is examining such a candidate with a systolic murmur, and one is in doubt as to whether this sound is heard only at the base

of the heart, or whether it is also audible at the apex, it has frequently seemed to me that I could hear the murmur better in the posterior axillary line at a level one inch below the angle of the scapula; certainly that I could isolate and identify the sound better at this location than was possible at the apex. To me it has been quite surprising to see the number of athletes, swimmers, distance runners, and basketball players, who have a definite valve leak, and yet are able to continue competition. It would seem as if such men could be used for some branch of the service for clerical positions.

When only one test chart is used for the purpose of testing vision, it is sometimes difficult to determine the degree of sight in the two eyes, particularly where the first eye tested has the better vision. One man who was being tested as to his eyesight, was almost blind in his left eye, but he had memorized the 20/20 line almost perfectly, so that he could read the letters forward and backward, and could skip every other letter successfully. In suspicious cases it is often useful to use a card with a hole cut in it so that only one letter at a time is seen. Also a second chart, kept under cover except when needed for use, is a help. If the waiting line of men have the opportunity to study the chart or to hear the reading of it by preceding men, it aids them to memorize the letters. Usually, by asking the applicant to read every second, third, or fourth letter from either end, one can avoid errors. For this reason, a chart with a large number of letters on each line, is of value. Charts for the eye test vary greatly in the sharpness and clearness of printing. One of the simplest, cheapest, most portable and certainly not the least accurate, of the color vision tests, is a card with eighteen squares of colored paper on it, made by Brown & Burpee of Manchester, N. H., and sold by the Globe Optical Co., Boston, Mass., for 50 cents.

A good many men who have been rejected for the army or for Plattsburg on account of hernia, have this defect remedied by operation and present themselves for re-examination. I have been inclined, in cases where the result was good, to accept such men within a few weeks of operation. Surgeons tell me, however, that these men are not fit for army work in the field under six months after operation. A large number of men have relaxed or enlarged inguinal rings, and in some of them, while there is not definite protrusion of the bowel, there is a definite impulse on cough. While such cases do not represent a definite hernia, there is always risk of symptoms occurring, even if the signs do not increase; hence such applicants should be viewed with suspicion.

To me as a medical man, a candidate who has recently been operated upon for varicocele, or who has a radical operation for the cure of hydrocele, and who presents, as all such patients do, so I am told, a much infiltrated condition of



the groin and scrotum in the one case, or marked thickening of the epididymis in the other—such cases, I may say, are viewed by me with deep, inherent distrust. My surgical friends tell me that in such operations one should not expect complete absorption under six or eight months, or even longer, and candidates may safely be accepted in spite of the thickening of the tissues.

Another difficulty arises as to what should constitute a disqualification on account of foot defects. The presence, merely of a very marked degree of flattening of the anterior or posterior arch of the foot, is not a disqualification, since thoroughly flat feet, strong functionally, and without symptoms, may, and usually will, carry weight better than a beautifully shaped, high arched foot. Again, feet, that (so far as the tracks of the soles upon the floor are concerned, seem perfectly normal) may occasion a disqualification of the applicant because of marked pronation, with weakness;—"knock-ankle" as Dr. E. H. Bradford has termed it, and eversion of the foot upon the ankle. Strength, mobility, freedom from symptoms and a consideration of the man's weight are the fundamental points in judging the competency of a pair of feet. Some of the flattest arches that I have seen, have been in men of very light build. Symptoms in connection with the feet are often misleading, since a candidate eager to enter the service will deny ever having untoward symptoms of any sort:—on the other hand, real or alleged foot troubles are a favorite cause for claim for excuse from military duty or for a discharge from the service. Many feet that are flat from the wearing of improper shoes or from lack of the use of the muscles can be much benefited by muscle training, and many cases of pronation can attain a high degree of serviceability by the use of a wedge under the inner side of the heel, the so-called "modified Thomas heel." This is of course difficult to provide in the case of soldiers, who wear out shoes fast, and for whom specially altered shoes cannot be provided in numbers. In this connection, I have been interested to see that the chief orthopedic authority of the British Army,<sup>1</sup> has advised that all soldiers should be provided with shoes the heels of which are higher on the inner side, which would seem to me to be a useful and feasible suggestion.

#### REFERENCE.

- <sup>1</sup> Notes on Military Orthopedics, p. 44, Colonel Robert Jones, C.B., Inspector of Military Orthopedics, British Army Medical Service. Paul B. Hoeber, New York, 1917. (Abstracted in part in Journal American Medical Association, Aug. 4, 1917, p. 401.)

## THE ARMY SURGEON OF OTHER DAYS.

BY HOWARD DUDLEY KING, M.D., NEW ORLEANS, LA.

THE army surgeon of the present day is a most fortunate individual if we are to compare him with his brother of the sixteenth century, who rendered service in the English civil wars. The surgeon of those times was poorly paid, and

did not enjoy either rank or standing. However, in many instances the pay was fully commensurate with the character of the professional services rendered. In one respect the military surgeon of four centuries ago fared better than his more modern brother in that he was a non-combatant in the fullest sense. The medical man did not figure in the casualty lists. It was rare to hear of a fighting Asclepiad, and still more rare to find a physician's name among the killed, wounded or missing. All throughout the civil wars military surgeons appear to have been treated by both sides as non-combatants, and to have enjoyed certain privileges defined by custom rather than by any set rules or regulations. When in the field they wore a distinguishing badge, and to the credit of both sides the insignia was accorded the fullest respect. No surgeon was allowed on the field without his baldric. Military surgeons were often allowed to enter a hostile camp or fortress in order to treat wounded men of their own side, and seldom was the privilege abused. Medical men falling into the hands of the enemy were not usually retained as prisoners, and in many cases they made no distinction between Roundheads and Cavaliers if human suffering was to be relieved. As an example of the goodfellowship extended the medical men of those days, the following anecdote is most noteworthy. In 1644, Henry Johnson, surgeon of the King's own troops, wrote as follows to the Parliamentary Governor of Newport, Pagnell, asking for the relief of his apprentice who had been captured in a skirmish at Kidlington:

"It is very well known how careful I have ever been in dressing your wounded men whenever they have fallen into our hands. Therefore, if you will give him a speedy release and safe pass to Oxford I am very confident that the favor shall not pass without an endeavor of recompense, for if at any time any chirurgeon or wounded men of yours shall fall into our hands my care of getting releasement or dressing those that have need thereof shall manifest how great a favor you have done to your obliged servant."

In the armies raised by Parliament there were usually two or three medical men attached to the staff of the general, who supervised and controlled the medical administration of the whole army. Aside from regimental surgeons, there were also a score of assistants and medical understrappers. In the list of Essex's army there appear a "physician to the train and person," Dr. St. John, and a "surgeon to the train and person," Laurence Lowe. In the list of New Model the names of four medical officers appear among the staff, two physicians to the army, an apothecary to the army, and a surgeon-general to the army. The armies in Ireland and Scotland had each attached a physician-general, a surgeon-general, and an apothecary-general, and this arrangement survived in the post-Restoration army.

The chief of these officials was the physician-general, who was usually a man of some standing, and was paid accordingly. The rate of pay was ten shillings per day, or about \$2.50. Next in point of rank and pay was the apothecary-general whose salary was six shillings and eight pence a day, an equivalent in our money of \$1.50. The surgeon-general was not alone last in rank, but also in pay. His remuneration never exceeded four shillings or a dollar a day. Cromwell's surgeon-general received no more than the American private of today. Each surgeon had a couple of assistants who received about forty-eight cents a day. In 1651 the surgeon's pay was advanced from a dollar a day to a dollar and a half, or six shillings; in 1655 it was fixed at five shillings, and the economists cut off one of his assistants; in 1657 the surgeon's pay was again reduced to the original four shillings a day. Whenever the matter of economy was broached in Parliament the surgeon's pay was juggled with. Monk, who was in command of the army in Scotland, considered the army surgeons underpaid, and ordered those under his direct command to be enrolled as privates in order to give them an additional nine pence or eighteen cents a day. Dual office holding in military circles thus is not of recent origin. However, Monk seems to have been actuated by kindlier motives than countenancing petty graft.

Very few of the military surgeons of the sixteenth century were really competent men, and not many attained the distinction of being enrolled in the Royal College of Physicians. General Monk vigorously resented one of Cromwell's appointments in the person of a certain Mr. Fish, surgeon to the artillery train. Fish was a former surgeon's assistant who had resigned to avoid a court-martial for misconduct. Monk exercised the greatest care in the selection of his medical officers.

As many of the army surgeons were men of the most mediocre ability, it was customary in important cases to call in other aid. Parliament sent a special physician to Northampton to attend Skippon, who had received serious wounds at the battle of Naseby. In 1651 Cromwell fell ill in Scotland, and two of the leading medical men of London were immediately despatched to Edinburgh by the Council and State. These outside practitioners were always liberally paid for their services.

When a soldier reached a hospital, either through illness or injury, a certain proportion of his pay was stopped to pay for nursing and drugs. There were no movable hospitals attending the army during active campaigning. In 1643, Essex sent the wounded soldiers from the siege of Reading up to London for treatment. An order of Parliament at that time reads "that the Lord General hath been enforced to send back many sick soldiers to be billeted in some remote houses and towns, some miles distant

from London till it shall please God to restore them health and ability to again return to his army." The badly wounded were left in villages near the battle field, where a small pittance was usually paid for their medical care, but most frequently they were left to their own devices.

Throughout the first and second civil wars the London hospitals supplied the only permanent provision for the cure of sick and wounded soldiers. St. Bartholomew, Bridewell, St. Thomas, and Bethlem, the most famous of London's hospitals at that time, were freed by Parliamentary Act of all taxes and assessments on the ground that they treated many of the wounded soldiery. In a short time these institutions proved insufficient for the care of the soldiery, and it became necessary to build special military hospitals. Army hospitals were now established in various parts of Ireland, Scotland, and even in Flanders. As to attendance on the patients, there were no hospital orderlies in those days, and the nursing was entirely done by women. These nurses were by special order chosen from the widows of soldiers. The various hospitals drew up rigid regulations governing the conduct of both nurses and soldiers. A soldier who got drunk or used profane language was fined, and a repetition of the offense meant expulsion. A nurse who neglected her duty, or "made any disturbance by scolding, brawling or chiding" was punished in much the same way as the drunken soldier. If a soldier married a nurse both were to be expelled at once.

### Clinical Department.

#### GONORRHEA IN YOUNG MALE CHILDREN, AND ITS TREATMENT.

By WALTER D. BIEBERBACH, M.D., WORCESTER, MASS.

URETHRO-VULVO-VAGINITIS, due to gonococcus, in young female children is not a rare disease and, especially, this is more true among the poor and children that are housed in institutions. It is easily seen that young female children can readily contract this disease from parents or other older members of the home by direct contagion or indirectly, through the agency of towels, wash-rags, fingers, toilets or bed clothing. Then it has been shown that when one case is introduced into an institution the disease spreads rapidly, probably by the medium of the bath, toilet or towels. This is an affection which recent studies have shown to be much more prevalent than has generally been believed, and it is not uncommon for a physician to see several of these cases during the year. However, gonorrhea in the male child is a rare disease, at least in boys under twelve years of age; in this respect affording a marked contrast to gonorrheal urethro-vulvo-vaginitis observed in the opposite

sex. The cause, as suggested by some authors, is an attempt at intercourse, often suggested by a much older female.

I believe that it is the general opinion of the physician that very exceptionally the contagion may be mediate by means of fabrics or by foreign bodies previously infected, being introduced within the urethra. Such cases, I believe, do exist, as I will demonstrate in a boy four years of age, who was referred to my services at the Worcester City Hospital. Too much careful attention cannot be paid to inflammatory conditions of the prepuce or penis, and this is true when one is dealing with a long foreskin where a phimosis exists. When these conditions present themselves and there is a pussy discharge, it is wise to examine carefully the discharge microscopically to try to find out what form of a micro-organism we are dealing with.

It has been shown that in the normal urethra there are micro-organisms identical in all respects with the gonococcus. Identification of these micro-organisms under the microscope is not a proof of the specific infection, and this is more apt to be true if the child is suffering from a phimosis where retained secretions are liable to cause an infection of the urethra. Should an organism be seen under the microscope that resembles the gonococcus, then one should resort to cultivation on artificial media and positively prove the nature of the infection. Therefore, it is wise in all such cases carefully to search for the gonococcus, since simple irritative urethritis is by no means uncommon and is, in the beginning of its course, not to be distinguished clinically from true gonorrhea.

I have had in the last short while the experience of falling flat in my diagnosis in which two male children were referred for circumcision for phimosis, later to find, following the operation, that I was dealing with a case of gonorrheal infection. One takes too much for granted that such a condition could not exist in children of six and four years of age, and this led me to believe that I was dealing with a simple urethritis, the primary cause being a tight, long prepuce producing balanoposthitis. However, this one point shows that, regardless of age, one should first proceed in all cases with a microscopical examination, as in children of this age gonorrhea is generally contracted in the ordinary manner.

The cases that I will report will show that it is possible for the male child of very young age to be infected, either by direct or indirect contact.

CASE 1. J. P. a boy of six years of age, well developed physically, presented a marked case of phimosis. There was considerable narrowing of the preputial orifice, so much so, that it was impossible to retract the foreskin over the glans penis. About the margin of the prepuce was a copious offensive white discharge. The foreskin was tender, edematous and swollen. At this visit a diagnosis was made of phimosis, the cause being balanoposthitis,

due to a long, tight foreskin. The treatment advised was circumcision, and on the following day the child was operated upon. On account of the marked edema, circumcision was performed under ether. A dorsal incision was made and the flaps trimmed. The edges were sutured with catgut. Some few hours after operation the child was unable to urinate. The dressings were removed and the external meatus was found to be pointed and swollen and glued together. On separating the lips of the meatus, there was a free flow of thick white pus, which relieved the child, thus allowing him to pass his urine. Microscopical examination of the pus showed a number of Gram-negative diplococci, both intra- and extracellular. Cultures were made which proved the presence of gonococcus.

A few days after, the mother brought to the clinic the younger child, who was three years old, complaining that he was having trouble similar to his brother. On examination he presented the same condition as the first, except that the foreskin could be retracted over the glans penis showing a free urethral discharge. Microscopical examination of the discharge showed the presence of gonococci, and they were found on culturing. In the case of the boy of six years, both urines were cloudy, containing pus and a number of shreds, showing that he was suffering from an acute antero-posterior gonorrheal urethritis. The first urine of the boy of three years was cloudy, the others were clear and the diagnosis being acute anterior gonorrheal urethritis.

An attempt was made to learn the source of infection. The mother and father were asked to submit to examination; also the remainder of the family, which consisted of a girl thirteen and a boy eighteen years old. The boy was a step-brother to the other two children, his father having been dead for the past few years and this being his mother's second marriage.

The mother and father denied all venereal disease and on examination were negative. The oldest boy of eighteen gave a history of suffering from an acute attack of gonorrhea four months ago. He had been under the care of a physician, and one month before the children were admitted to the clinic he had been pronounced cured. At the time of my examination he had no signs or symptoms of the disease, and from my examination I would say that he was cured. A gonorrheal complement-fixation test was done and reported as negative.

Examination of the girl of thirteen showed that she had a ruptured hymen, and on separating the vaginal wall there was a somewhat free, thin greyish discharge, which on microscopical examination showed the presence of gonococci. Smears made from the urethra were negative. From the absence of the acute symptoms and the microscopical picture, I would say that the girl was suffering from a subacute or chronic gonorrheal infection.

The fact that the three children were suffering from gonorrhea was all that I was able to obtain. It was impossible to get a clear history of any of the cases.

The mother and father could give very little information as to the source of the infection. They stated that the boy of six years and the girl of thirteen attended school every day, while the child of three was kept at home. Furthermore, none of the children were away from home for any length of time. I thought that if some one was sent to the house of the parents to investigate their mode of

living, we might be able to come to some opinion as to the source of infection.

The case was reported to the Society for the Prevention of Cruelty to Children and, through their kindness, a female agent was sent to investigate the living conditions of the family. Each of the children was questioned closely, but no information could be obtained from the boys that were suffering from gonorrhea. They were very stubborn and refused to answer questions. The girl of thirteen was taken into a room alone and after careful questioning admitted that some few weeks before, while the parents were away one afternoon, the oldest boy of eighteen placed her on his lap and attempted intercourse. Following this attack she suffered considerable pain and for some time afterwards experienced a burning sensation on urination. She said nothing to her parents of what had happened; the reason for this we are not able to have her explain.

On the day of the examination the boy of eighteen learned on his return home that an agent of the Society had been to the house to investigate the cause of infection. Confronted by his mother on what had transpired, he immediately turned about, left the house and to this date has not been heard from.

My conclusions as to the source of infection in this case was that the boy of six contracted the disease from the girl of thirteen. They both occupied the same bed and the sexual organs of the male child were well developed and much larger than the average child of the same years.

The younger child of three slept with the boy of six on different occasions and probably contracted his infection from discharges that had contaminated the bed clothing.

The girl's infection dates back to the time that she states that the older boy of eighteen attempted sexual intercourse with her. At that time the boy was suffering from subacute gonorrhea and, I believe, infected his step-sister.

In this case we have the direct and indirect method of infection, the older child receiving his infection from the female, and the younger child indirectly from coming in contact with some article that was contaminated with the discharge of the child of six years.

CASE 2. T. Mc., a well developed boy of four years, physically and mentally normal. He was admitted to the service for circumcision. *Examination.* He had a marked phimosis with a moderate lymphangitis extending along both sides of the shaft of the penis. The external orifice of the prepuce was reddened, and on stripping the foreskin a thin, white, pussy discharge was noticed. A diagnosis of infected balanoposthitis was made and circumcision was advised. At this visit the child was etherized and circumcision performed by the dorsal slit method. Patient was discharged and advised to return for future dressings. Late on the night of the operation, I was called to the patient's house and informed that the child was unable to urinate following the operation. During the day the mother had called in a physician to relieve the retention, and sedatives and hot baths had been given, with no results. On my visit I found the child to be suffering from pain, walking about the house, straining every few minutes in an attempt to urinate. On stripping the urethra there was a profuse white pussy discharge, of which I made several smears, and later on returning to my office found that they

contained many intra- and extracellular Gram-negative diplococci. At this visit I decided there was but one thing to do in relieving the child and that was catheterization, for everything had been done, such as hot sitz baths, by the former physician, with no results. The patient was placed on the kitchen table and a soft rubber catheter, size 10, french, was inserted into the anterior urethra, just to the cut-off muscle, and the urethra was gently irrigated with a hot 2% boric acid solution. Following the anterior irrigation the catheter was removed, boiled, and gently introduced within the bladder. The bladder was relieved of 10 ounces of clear, normal urine and followed by slow irrigation with hot boric acid solution. The child was immediately relieved and soon fell into a sound sleep. The mother was advised to return on the following day for future treatment, which she did, and stated that the boy was able to pass his urine, but was obliged to urinate frequently, about every hour. At examination this time I was able to get pus for culture which showed a gonococcus growth. The urine of the first and second glasses was cloudy and contained pus, showing that the child was suffering from an acute antero-posterior gonorrheal urethritis.

In tracing the source of infection in this case I learned that the mother kept boarders and that in the household there was a female suffering from gonorrhea, and one male with an acute case of antero-posterior gonorrheal urethritis complicated with an acute epididymitis. The child used the same toilet, and was in the habit of getting into bed with these members that were infected. Their habits were such that careful examination showed that the child no doubt received his infection by indirect contact, coming in contact with some infected object such as toilet or bed clothes. In this home was a female child of three years, and special instructions were given as to prophylaxis and care of the child so as to prevent infection. With all care and instruction the female child developed, one week later, a severe urethro-vulvo-vaginitis.

#### *Care and Treatment of the Boys.*

Prophylaxis was placed on all cases. The mothers were instructed as to the pussy discharge and ordered to burn all dressings. They were also warned of the dangers of gonorrheal ophthalmia.

The children were placed on a non-stimulating diet, excess of meat was avoided, also highly seasoned, salty food. Liquids were restricted to milk and water, water being used very freely. For the purpose of catching the urethral discharge and keeping it away from the clothing a small bag was made in which the penis was carried. Absorbent cotton was placed in the bottom so as to catch the discharge.

#### *Therapeutic Treatment.*

Internally the two older boys, six and four years of age, were given five minims of thyro-sol in small round capsules three times a day, one hour after meals, while the boy of three received but two a day. From these doses their stomachs and kidneys showed no irritation and they were able to take this amount during the course of treatment, with rest spells in between. Milk and water were forced and bowels were kept well open.

**Local Treatment.**

Case No. 1 was carried on protargol irrigation with a solution of 1:8000 and gradually increasing the strength to 1:4000. Irrigation was performed by inserting a soft rubber catheter, size 10, french, into the anterior urethra and gently forcing this fluid through by means of a large hand syringe. Following this a clean catheter of the same size was introduced just behind the cut-off and the same solution was forced through the posterior urethra to the bladder. When the child complained of bladder fullness it was removed and the child was allowed to stand and empty the bladder. This line of treatment was carried out every second day, occasionally the child skipped a treatment on account of the mother being unable to come. The younger child of three years never developed a posterior infection, and simple anterior irrigation was carried out. This child cleared up in four weeks, while the one with the posterior infection took six weeks. In case No. 2, hot potassium permanganate was used in increasing strength when at about the sixth week the case was at a standstill, both glasses still hazy and there was a slight daily discharge. The treatment was changed to silver nitrate, followed by a marked improvement, starting with 1:10,000 solution and working down to 1:4000. This last was followed by discomfort to the patient, but was relieved, when too severe, by saline irrigation, which immediately stopped all burning. In seven days all discharge subsided and both glasses of urine were clear and sparkling. After all local treatment was stopped, both children were kept under observation. Repeated swabs were taken from the urethra and were all found at each examination to be negative. Urines of three glass tests were clear and no other symptoms present, the children were discharged as cured. During the course of treatment the children suffered no ill effects. They held their weight and apparently did not seem to be greatly disturbed. By being very gentle and gaining their confidence, I found no trouble in having them submit to treatment.

I believe that this article shows the importance of microscopical examination in children suffering from phimosis; by so doing one is in a position to determine at the first visit the form of micro-organism that is present and at the same time make a correct diagnosis.

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**Society Report.**
**BOSTON SURGICAL SOCIETY.**

(INCORPORATED.)

MEETING No. 19.

A CLINICAL meeting of the Boston Surgical Society was held on Monday, November 5, 1917, at the Carney Hospital, at 10 a.m.

**PAPILLOMATOUS OVARIAN CYST WITH TWISTED PEDICLE.**

Dr. John T. Bottomley operated on a widow, 36 years old, who thirteen months before had found, in the right lower quadrant of her abdomen, a round mass of the size of an orange; a month later there appeared acute symptoms which indicated the presence of an ovarian cyst with a twisted pedicle; these subsided in the course of a few days. The tumor continued to increase in size till, about a month before the woman entered the hospital, acute symptoms again developed in the lower abdomen; these, too, gradually subsided and she now presents a moderately tender, tense, smooth mass rising out of the pelvis almost to the level of the umbilicus and more prominent on the left than on the right side. A preoperative diagnosis of "ovarian cyst with a twisted pedicle" was registered. At operation a right ovarian cyst, size of a football, showing many evidences of recent, as well as old, inflammation, with a thick, short pedicle twisted  $1\frac{1}{2}$  turns in a direction opposite to that of the hands of a clock, was first removed. Its papillomatous nature was then evident and consequently the uterus and the other tube and ovary were quickly removed. Suture of the abdominal wound without drainage concluded the operation.

*Note.* The discovery of the papillomatous projections made the other step of the operation necessary. The tumor was removed through an abdominal incision of sufficient length to ensure delivery of the tumor without rupturing it—something much to be desired in such cases, in the handling of which the short incision should have no place. The pathologist reported, "papillary adenocystoma of both ovaries with hemorrhage and necrosis." The convalescence was entirely normal.

**"ESSENTIAL" UTERINE HEMORRHAGE.**

Dr. Bottomley operated on a widow, 39 years old, with one child, for metrorrhagia which had been almost constant for the preceding two months, and which, despite treatment, had been present and troublesome for about a year. The physical examination showed little except the general signs of a steady loss of blood. The preoperative diagnosis was put down as "'essential' uterine hemorrhage." At operation the slightly enlarged uterine fundus and the left tube and ovary were removed; the right tube and ovary were left *in situ*.

*Note.* The real cause of the bleeding was not disclosed by the pathologist, who reported only "slight chronic endometritis." The convalescence was uneventful. Dr. Bottomley had had the patient under observation for a year before operation and was unable to discover the reason for the bleeding, which was not permanently checked by any of the usual remedial measures.

## GALL-STONES; STONE IN THE COMMON DUCT.

Dr. Bottomley operated on a woman, 52 years old, who, fifteen years before, had had a definite attack of biliary colic. Since then she had suffered from what she termed "indigestion" until three months before her entrance to the hospital, when she had a very severe attack of pain in the upper abdomen, with chills, sweats and jaundice; she was very ill for nine days and then gradually grew better. She is said to have had "sugar in her urine" for the past year, but in none of the urinary tests made before operation was sugar found. The preoperative examination showed nothing of note except a very fat abdominal wall, with marked tenderness and some muscular spasm in the right hypochondrium.

At operation, a gall-bladder packed full of stones was removed; a single stone, felt in the hepatic duct, was forced down into the common duct and removed; exposure of the common duct was difficult because of the many adhesions present; the pancreas was not abnormal to palpation; the common duct was drained.

*Note.* The convalescence was not noteworthy except for the fact that, three weeks after operation, bile was still escaping from the drainage wound, though in gradually decreasing quantity.

## PROCIDENTIA; CYSTOCELE; RELAXATION OF THE PELVIC FLOOR WITH RECTOCELE.

*Operation.* Watkin's operation for procidentia and cystocele; Crossen's operation for relaxation of the pelvic floor, attended with rectocele.

Dr. F. W. Johnson operated; the patient, 44 years old, was admitted to the hospital, complaining of falling of the womb, backache and general weakness. Her mother died of cancer of the stomach, one brother died of tuberculosis; the patient's previous history was not important, except that she had typhoid fever twenty-five years before, and said she had been treated for "edema" nine years previously at the City Hospital. She had been married twenty-four years, had had nine children, the oldest 23 years, the youngest 4 years; she had never miscarried; her last menstrual period was in December, 1916. All labors had been normal, as had the puerperia,—except the last one, when she said she had "heart trouble."

For the past year the patient had noticed that "the womb came out of the vagina"; at first it was possible to replace it, but not in the last few months; there was much frequency in micturition, with pain and dragging in the sacral region.

Examination of the urine showed a slight trace of albumen, no sugar, sp. gr. 1.010, with pus and mucus in the sediment. Blood pressure. S. 148. D. 110; hemoglobin 80%, white blood count 9000.

Dr. Johnson operated upon a second case, showing laceration of the cervix; prolapse of the uterus; cystocele; relaxation of the pelvic floor with rectocele.

*Operation.* D. and C. Emmet's amputation of the cervix; Watkin's operation for prolapse and cystocele; Crossen's operation for relaxation of the pelvic floor, attended with rectocele.

The patient was 40 years old, married for thirteen years; she had had six children, the oldest 12 years, the youngest 2 months; since the birth of the last child, "falling of the womb" had prevented her from getting about for ordinary household duties. There was profuse leucorrhoea: urine examination was negative.

## OPERATIVE NOTES.

In the above two cases the prolapse of the uterus and the cystocele were remedied by the Watkin's operation of interposition. This operation should not be performed when future pregnancies are anticipated.

The methods employed which we have found by experience to be the most satisfactory in separating the vaginal wall (cystocele) from the bladder, and in securely fastening the uterus in anteversion to the anterior vaginal wall after removal of the slack, are described below.

*Cystocele.* A male sound is passed into the bladder and turned around so that its point pushes the bladder downwards and forwards in the median line, and towards the operator. Just below the point of the sound, an incision is made through the vaginal wall, care being taken to go through the *fascia* of the anterior vaginal wall. This incision is carried laterally as far as needed to take in the slack when removing the redundant portion of the anterior vaginal wall. The sound is removed and the tissue on either side of the incision is grasped by two strong-holding forceps (Ochsner), put and kept firmly on the stretch, while a long, pointed, curved scissors (concavity towards the operator) is worked up under the fascia until the point of scissors reaches well beyond the junction of the bladder and urethra. As the scissors are removed they are opened. The anterior wall is then divided its whole length by straight scissors. This method enables you quickly, and without danger, to remove the fascia wholly from the bladder, and from the tissues on the sides. After the uterus is delivered it is fastened to the anterior vaginal wall, every suture including the fascia. It is only by utilizing the fascia that you prevent for good the return of the cystocele. Silkworm gut is used for the first three sutures, the first being passed through the fundus uteri in front and just below the tubes. These sutures are shot and allowed to stay in place one month. No. 2 chromic catgut is used for the other sutures, and each suture goes through the vaginal wall, including the fascia, and takes up a good bite of the uterus, so that when the op-



eration is finished, the uterus throughout its anterior surface down to the cervix is sewed to the fascia of the anterior wall. An important suture is the one which takes up the bite in the uterus at the junction of the body and neck. When tied, this suture straightens out the lower segment of the uterus, and throws the cervix back.

For the relaxation of the pelvic floor, attended with rectocele, Crossen's operation is done. No. 1 chromic catgut is used throughout in this operation.

The bowels are not moved for several days. The catheter is not used unless necessary, and after each voiding the parts are sprayed off. After forty-eight hours, a short vaginal douche of sterile water is given through a catheter, morning and night. For diet, the white of an egg in one-third tumbler of flavored water is given every three hours when awake, for six days. Water *ad lib.*

#### MYOMATA UTERI.

Dr. Stephen Rushmore operated upon a colored woman, 29 years old, who had been married eleven years, but had never been pregnant. Menstruation began at 12 years, had always been regular, lasted 3 to 4 days, never profuse or painful, until the last year, when the flow has increased in amount, and lasted 6 or 7 days, often with clots. There had been a vaginal discharge for the previous four months with dragging down feeling in the back and lower abdomen; patient lost 15 pounds in the last four months. The urine was normal; hemoglobin 75 per cent., and blood count showed 11,000 leucocytes.

Examination showed no sign of infection of the urethra or vulvo-vaginal glands; the outlet was not relaxed; the cervix was fairly well up in the vaginal vault. The body of the uterus was irregular in outline, hard, firm, rising nearly to the umbilicus. A median abdominal incision was made from just below the umbilicus to the symphysis. The liver, stomach, gall-bladder and kidneys were normal. Omentum and intestines adherent in the pelvis by thin, filmy adhesions to the top of the enlarged, irregular uterus. These were freed and the intestines packed back and many adhesions in the pelvis of the enlarged uterus, tubes and ovaries were cut. In the uterus were two myomata, one near the right cornu, about one and one half inches in diameter, extending into the right broad ligament somewhat. The second was about three and one half inches in diameter, globular and extending into the left broad ligament. On account of the adhesions and the impossibility of lifting the uterus, it was removed first, going down on the left side, across the cervix and up on the right side. The tubes were closed, and were adherent, so they were removed with the right ovary. The left ovary was so adherent that only part of

it was cut away. The cervix was cupped and closed; raw areas were closed over with peritoneum after suspending the stump of cervix to the stumps of the round ligaments.

The vermiform appendix was normal, and was removed, inverting tied stump through purse-string of linen thread and reinforcing.

Closure in four layers with catgut and silk-worm gut in fascia and skin.

*Comment.* Owing to the shape, size and position of the larger myoma and the adhesions of the tubes and ovaries, it was difficult to expose the ovarian vessels, so that the incision for removal was made between the uterus and the left tube and ovary. Then by grasping the tumor with heavy, long-toothed forceps, it was easily rotated in the pelvis, exposing the left uterine vessels. These were tied and cut, and the incision was carried across the cervix, rotating the uterus still further, and up on the right side between uterus and tube and ovary. Where space is limited and the operator can see only a little way ahead, by working close to the uterus and tumor, injury to important structures can generally be avoided. When the larger mass is removed there is plenty of room for dealing with the adherent structures laterally, which also are near the large blood vessels.

A portion of the left ovary was not removed because it makes very little difference with these patients, clinically, whether a fragment of the ovary is left or removed, and leaving it is much easier than digging it out and perhaps getting raw areas which require packing and a drain to check oozing of blood.

The stump of the cervix was left. In the first place, the probability of danger from the cervical stump is slight, but the danger is, of course, a very serious one; cancer may develop. Then the post-operative mortality and morbidity is slightly greater after pan-hysterectomy. As to the advisability of removing the cervix, opinion is divided at present, but the older view, preferring leaving in the stump, still prevails.

A cone-shaped piece of cervix was removed before closure. By many this procedure is preferred to the use of the cautery. The knife gives two clean surfaces which heal quickly when approximated and, by carrying the incision low into the cervix, most of the gland-bearing area can be removed. The cautery gives a slough which must separate before healing takes place and which may easily become infected. Furthermore, it does not seem probable that the use of the cautery is more likely to prevent carcinoma later than is the knife. If anything is thought necessary to prevent carcinoma, the reasonable procedure is to remove the cervix.

The stump of the cervix was suspended by the stumps of the round ligaments. This gives support to the cervix, important in multiparous women, and makes covering over raw areas with peritoneum easier, appropriate for all cases.



# OLD INFECTIOUS ARTHRITIS WITH ANKYLOSIS OF THE METATARSO-PHALANGEAL JOINTS.

Patient gave a history of old infectious arthritis of ten years' duration in which the joints of the toes were ankylosed, all of the metatarsal shafts being dislocated, resulting in the heads of the metatarsals being so prominent that the patient when walking bore weight directly on the heads, and causing almost total incapacity.

Dr. W. R. MacAusland (by invitation) operated, making a semicircular incision on the bottom of the foot, removing the distal heads of all metatarsal bones.

*Note.* Results of this excision are most satisfactory in those types of long-standing arthritic cases in which the heads are dislocated, resulting in tender, painful forefeet.

## HYPERMOBILE SEMILUNAR CARTILAGE.

Dr. W. R. MacAusland (by invitation) operated upon a young woman who, for two months, had complained of pain and swelling in the right knee; the pain came on suddenly, the joint "caught" when walking and it was impossible to fully straighten it. She had been in the hospital six weeks; when she was admitted the knee was in 10 degrees permanent flexion; there were pain, sensitiveness and swelling in the region of the internal semilunar cartilage, and there was a small amount of fluid in the joint; x-rays were negative. Under rest and strapping there had been no improvement.

A lateral incision was made on the inner side of the knee and the internal semilunar cartilage found to be hypermobile. Nothing else was found in the knee joint to account for symptoms. This cartilage was removed *in toto*.

Patient since that time has made a satisfactory and rapid convalescence; 90 degrees motion in knee joint and walking without pain at the end of three weeks.

*Note.* The findings of persistent swelling, tenderness, and pain in the region of the internal semilunar cartilage, together with small amount of fluid, and particularly limitation of motion in complete extension, point toward injury of the internal semilunar cartilage. It is not necessary for a cartilage to be actually broken or entirely torn from its attachment to give symptoms. Removal of the cartilage *in toto* gives satisfactory results.

WALTER C. HOWE, *Secretary.*

## AMERICAN PROCTOLOGIC SOCIETY.

NINETEENTH ANNUAL MEETING, HELD AT NEW YORK, N. Y., JUNE 4 AND 5, 1917.

The President in the chair.

Officers elected for the ensuing year:

President, Jerome M. Lynch, M.D., New York, N. Y.

Vice-President, E. H. Terrell, M.D., Richmond, Va.

Secretary-Treasurer, Collier F. Martin, M.D., Philadelphia, Pa.

Executive Council:

1. Alfred J. Zobel, M.D., San Francisco, Cal.
2. Jerome M. Lynch, M.D., New York, N. Y.
3. T. Chittenden Hill, M.D., Boston, Mass.
4. Collier F. Martin, M.D., Philadelphia, Pa.

The next Annual Meeting will be held in Chicago, Ill., June 10, 11, 1918.

## THE PLACE OF THE PROCTOLOGIST IN A DIAGNOSTIC GROUP.

By Alfred J. Zobel, M.D., F.A.C.S., San Francisco, Cal.

(Abstract.)

Dr. Zobel in his address stated that the charter members of the American Proctologic Society were the pioneer teachers and practitioners of modern proctology. Through the efforts of the fellows of the Society, proctology has received recognition as a specialty, both from the American Medical Association and the American College of Surgeons.

Attention was again called to the fact that but few of the undergraduate medical schools give any adequate instructions in entero-proctology, by qualified men. In sharp contrast to this, it is noted that in every postgraduate medical school in the country there is a department of rectal and colonic surgery, whose existence is amply justified, not only by the number of patients which it treats, but by the large attendance of postgraduate students.

It is urged that the undergraduate medical schools, particularly those attached to universities, should take heed of the demands and needs of modern medicine, and that they should begin to realize that failure to impart instruction in entero-proctology, and in the other recognized specialties which have arisen in late years, impairs their standing as thorough teaching institutions.

Up to about twenty years ago, all the medical needs of a community were attended to by the so-called family doctor. But, year after year, changes have been going on until today is the day of the specialist.

This era of specialism gives evidence of the advancement and betterment of the whole profession; it means far more efficient service rendered to the public than it has received in the past.

It now requires a close and almost undivided attention to that subject alone, if one wishes to keep abreast with what is being accomplished in any special line of work.

With more knowledge and longer experience, the specialist better realizes the close relationship existing between his particular field and all the other parts of the body. He further

learns that while, from devoting his entire attention to his own special work, he excels therein, he consequently lacks knowledge, experience and adeptness in that of others. As a result, lately, among progressive men, there has arisen a movement to form what is known as "diagnostic groups." Group diagnosis is not a new idea. It has been used for years in the post-graduate schools, which are the only institutions possessing a staff of clinicians in every specialty of medicine and surgery. The present movement is simply an elaboration and an extension of the original idea.

Every diagnostic group should include specialists in every branch of medicine and surgery. In it should be an entero-proctologist, with training and experience sufficient to warrant the interpretation of his findings being considered of some value.

The Fellows of the American Proctologic Society have repeatedly urged the necessity for co-operation with the internist, surgeon, and other specialists. They have again and again pointed out that anal, rectal and colonic lesions often give rise reflexly to symptoms which may be wrongly attributed to disease in other parts of the body, and vice versa. This is especially true with regard to the reproductive and urinary organs of the male and female. Therefore, in the consideration of cases presenting symptoms in these parts, it is equally important to secure the opinions of the gynecologist, urologist, and proctologist before a correct and final diagnosis can be deduced.

It is the high-class men among the various specialists of medicine and surgery who best know the value of, and mostly insist upon the need for ano-recto-colonic examinations. They are the ones who best understand that through long and varied experience, skill in the use of the illuminated pneumatic sigmoidoscope, and ability to interpret correctly what is seen, the entero-proctologist is the one who should be relied upon to do this part in the diagnostic scheme.

The time has already arrived when even the laity recognize this, and they are now quick to take cognizance of the neglect of their medical adviser to secure for them an expert examination of the rectum and colon.

Every diagnostic group should include a competent proctologist. Only then will it be worthy of the name of "diagnostic group."

#### ADULT RECTAL PROLAPSE: TWO CASES AND A CONTRAST.

By Ralph W. Jackson, M.D., F.A.C.S., Fall River, Mass.

(Abstract.)

Too few papers have appeared from the pens of proctologists on the major types of rectal prolapse. The subject deserves more attention. Two sharply contrasting cases bring out the

writer's views on the therapy. The first was operated four times; extensive regional cauterization resulting in recurrence; posterior rectopexy resulting in recurrence; amputation, resulting satisfactorily as regards anal prolapse, but leaving a very large posterior vaginal hernia, which was promptly cured by cul-de-sac closure with sigmoid-utero-ventral wall suspension. The second, and less favorable, case was promptly cured by one operation identical with the final operation in the first case. The pelvic floor as a support depends on the sufficiency of four factors. The pelvic fascia is variable in strength and attachments, varying the depth of the peritoneal cul-de-sac. The strength of the levators and their uplift is not a constant thing. The anal and vaginal orifices may be guarded by sphincters, peri-vulvar muscles, a perineum and levators which are imperfect through trauma or atrophy. An amount of adipose padding about these structures is essential, but often lacking. The rectum has imperfect support above the pelvic floor, and its anterior wall none at all. Prolapse begins here from external pressure, or begins below as anal protrusion, but eventually the prolapse contains a hernial cul-de-sac. Regional cauterization is inadequate to meet any such faults. Posterior rectopexy does not support the primarily offending part. Amputation removes the troublesome part, but does not correct the faulty factors, which may allow recurrence per anum or per vaginam. Cul-de-sac closure, though a difficult operation, goes far toward such correction, and suspension helps. The writer would summarize, that the operation of first choice for these very troublesome prolapses is cul-de-sac closure through the abdomen, plus some form of suspension, to be followed and supplemented, if need be, later, by amputation or perhaps some plastic work on the elements of the pelvic floor.

#### RELATION OF HEMORRHOIDAL DISEASE TO THE HEALTH BALANCE.

By William M. Beach, A.M., M.D., F.A.C.S., Pittsburgh, Pa.

(Abstract.)

In discussing the "Relation of Hemorrhoidal Disease to the Health Balance," Beach sums up as follows:

1. The deleterious effect upon the patient's mind by increasing his irritability, and making him anxious and morose.
2. The many reflexes coincident with ulcerated large or small type of hemorrhoids.
3. The influence upon the so-called vegetative functions of the body and intimate associations with diseases of the heart, lungs, liver and kidneys.
4. The refractory or retroactive relationship in most cases of constipation.
5. The tendency of neglected cases toward infections and cancer.

## THE PRINCIPLES UNDERLYING THE CLAMP AND OPERATION FOR INTERNAL HEMORRHOIDS.

By W. Oakley Hermance, M.D., Philadelphia, Pa.

(Abstract.)

The author calls attention to the purpose of this form of operation.

First: To remove actual piles, or pathology.

Second: To support relaxed pile-bearing tissue and mucous membrane. After giving minute details as to his technic, he insists that only just enough tissue be removed to care for the pathology, being sure that columns of mucosa and skin be left between the eschars, thus preventing any undue contraction of the rectal outlet. Unless the tissue included in the clamp is excessive, it is not cut off, but is destroyed by the careful application of the cautery.

Care is taken that multiple strips of wet gauze are placed under the clamp to prevent undue radiation of heat to the surrounding tissues. Careful placing of the clamp, thorough cooking of the included tissue, combined with the crushing produced by the clamp, is depended upon to prevent such a complication as hemorrhage. After all danger of secondary hemorrhage has passed, the insertion of a gloved finger will overcome the tendency to contraction.

## ORIGINAL RESEARCH WORK ON PRURITUS ANI.

By Dwight H. Murray, M.D., Syracuse, N. Y.

(Abstract.)

Dr. Murray read his seventh annual report on original research work in Pruritus Ani.

He said that he did not feel it necessary to continue to report the work in as great detail as in past years, because so many men in the profession, over such a wide area, were uniformly reporting a confirmation of his claims for the etiology being streptococcus fecalis.

He said that he is working with Parke, Davis and Company for the perfection of a standard stock vaccine that can be used by anyone without the trouble to make cultures. He has used some of this stock of polyvalent strain from eight successfully treated patients, and the patients on whom it was used seemed to improve. He has used it only one month, therefore full judgment must be suspended until it has had a longer trial.

During the past year he found the patients all getting worse at about the same time, and finally found that a laboratory worker had been deceiving him as to the strength and kind of vaccine; any kind of bacteria was used, and few, if any, streptococcus fecalis. The laboratory worker resigned shortly after this, and on getting the work in the hands of a proper man all went well again.

Dr. Murray reported that the work of the past year had still more strongly proven the correctness of the bacterial (streptococcus fecalis) infection theory as the etiology. His conclusions of the work are—

First: Conclusions of former years are confirmed, and most of them are strengthened by experience of the past year.

Second: The troubles I have had with the laboratory worker, as shown herein, give proof that the benefit received by patients, following the use of streptococcus fecalis vaccine, is not a coincident.

Third: Increasing proof that if rectal pathology is present with streptococcic infection of the anal skin, an operation will not cure the pruritus ani.

Fourth: Increasing proof that if rectal pathology is present without a streptococcus infection of the anal skin, an operation will cure the pruritus ani.

Fifth: Continued proof that there may be complicating infections of the anal skin, in pruritus ani, by staphylococcus or B. coli.

Sixth: Having published six years of research work, taking into account the report of physicians in this country and abroad who have confirmed his findings as to the skin infection, he feels justified in now claiming that the etiology of pruritus ani is a skin infection, and that the streptococcus fecalis is the usual bacterium.

## ADENOMYOMA OF THE RECTUM.

By Frank C. Yeomans, M.D., F.A.C.S.,

Surgeon to the Central-Neurological and Work-house Hospitals; Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York City.

(Abstract.)

The writer's interest in adenomyoma is due to the following case, which appears to be unique:

Mrs. V., French, aged 37, the mother of two healthy children, was seen in consultation in September, 1916, for rectal hemorrhage and pain. The important points of her history were: pulmonary tuberculosis (?) six years before, cured; menses painful, the flow diminishing; always constipated until three years ago. Then occurred attack of diarrhea lasting five months, and thereafter intermittent attacks. Past year ten to twelve movements daily, containing blood and mucus. Pain over sacrum is aggravated at menstrual period and with the diarrhea.

*Physical Examination.* Pale, but well-nourished woman, weighing 142 pounds. Wassermann of the blood, negative. Urine normal. Chest and abdomen negative.

*Rectal Examination.* Three and one-half inches up on anterior rectal wall, just above

cervix uteri, finger feels a hard, fixed, fairly tender mass, the limits of which cannot be defined. Proctoscope shows a superficial ulceration, size of a quarter, at recto-sigmoidal juncture. This is red, clean, and bleeds freely on contact. Vaginal examination negative, except in posterior fornix was felt the same mass apparently the size of a guinea-hen's egg.

**Operation.** Sept. 26, 1917. Left rectus incision. No growths were found in liver or other abdominal viscera. The tumor was located in anterior wall of sigmoid just above its juncture with the rectum, and extended down two inches on rectum, cervix uteri and posterior vaginal wall. Lower third of sigmoid was mobilized, including small portion of posterior wall of uterus and its cervix, and superior hemorrhoidal artery was ligated. Then the abdominal wound was closed, and in lithotomy position the operation was completed by a typical Genu-Tuttle extirpation of the rectum, including the posterior vaginal fornix. Patient reacted promptly from the immediate shock of the operation. Bowels acted on third day, and union of sigmoid to peri-anal skin was primary except at one spot, which soon granulated. Patient left hospital in three and a half weeks, and is now well, having normal anal sensibility for bowel actions, which occur once or twice daily, with normal control. Vaginal and rectal examinations show no abnormalities.

Interest in this and similar tumors in this location centers in their

(a) *Origin.* Suggested origins are uterine mucosa, Wolffian ducts, and "embryonic rests persisting from the fusion of Müller's ducts." The author's case was clinically an intestinal growth. Dr. James Ewing, after careful study, reported, "the most likely origin is from superfluous material derived from that portion of the lower gut which continues on in the embryo to the bladder and allantois, and which normally atrophies. Persistence of a portion of this segment would furnish a source of smooth muscle and intestinal epithelium. I do not think the tumor is of Müllerian origin."

(b) *Symptoms.* Varying with the development and site of the growth, the symptoms would be: obstructive, dysenteric or neuralgic.

(c) *Diagnosis.* Tumor imparts a rather characteristic feel. Apt to be mistaken for infiltrating, inoperable malignant growth.

(d) *Prognosis.* Histologically it is benign. Clinically it may be malignant from the symptoms to which it gives rise, or actually undergo malignant change.

(e) *Treatment.* Surgical removal at the earliest date possible. The abdominal route is preferable, but if tumor is at recto-sigmoidal juncture a combined operation will probably be necessary for its removal, as was successfully done in the writer's case.

## PELLAGRA, THE PELLAGROUS INTESTINE, AND PERICOLIC VEILS.

By John L. Jelks, M.D., Memphis, Tenn.

(Synopsis.)

Dr. John L. Jelks describes recto-colonic conditions in pellagra, gives his observations in pellagra, which he has contended for seven years is an infection, which begins in the intestine in a similar manner as does typhoid fever; and contends that in all active or acute cases of pellagra he finds pathology in the intestines commensurate with other symptoms.

The speaker describes the prodromal and the late symptoms, and both the early and late pathology observed by him. The speaker describes the intra-abdominal, as well as also the gut pathology, in the different stages.

The speaker says pellagra seldom develops in sanitary and screened homes, and believes that sanitation, isolation, and the elimination of raw vegetables as a diet, and effectual screening, will control pellagra. He refers to the fact that the negroes and poor whites in his section have more money, and more to eat and a greater variety of diet than they ever had, yet that pellagra is increasing rapidly in the outlying districts about Memphis, though it seldom extends over into the sewered and screened section of the city proper. The speaker referred to a recent ordinance that had passed in the city of Memphis, requiring doctors to report all cases of pellagra, and to exercise the same precautionary measures in these as in cases of typhoid fever.

## NEO-PROCTOLOGY: A GLIMPSE INTO THE FUTURE.

By Jerome Morley Lynch, M.D., F.A.C.S.,  
New York City.

(Abstract.)

We cannot claim for proctology that it is a new field of effort. It was practised centuries ago. In early records are described the cutting of a fistula and the ligature operation for hemorrhoids. While, therefore, technic offers no novelties, physiologic surgery affords a most promising field for the further development of proctology.

The observations of the ancients were remarkably accurate, and, considering the limited amount of detailed knowledge at their command, are as wonderful examples of the power of human induction as many of the best conclusions of the modern day. Consider, for example, their decision that a hemorrhoidal flux was in some cases to be regarded as beneficent. Whether or not the cause was known as we understand it today, to be hepatic cirrhosis or right heart engorgement, still, for all, the observation is based upon as sound philosophy as could possibly be adduced today.

It is well for us, in the occasional mental stock-taking (which is periodically forced upon us) to bear in mind that the tendency of modern scientific instruments of precision, together with all the wonderful array of laboratory tests, while of indisputable value, are, in a certain sense, of greater value to the patient than to the physician, for they certainly tend to take from the latter the necessity for that keenness of perception and correlative interpretation of symptoms, which was the distinguishing characteristic of the earlier physicians, whose chief reliance was their own mental activity.

#### REPORT OF A CASE OF IDIOSYNCRASY TO QUININE AND UREA HYDROCHLORIDE.

By Collier F. Martin, M.D., Philadelphia, Pa.

(Abstract.)

Martin reports a case of toxic symptoms appearing in a patient from an injection of 3 m. of a 10% solution of quinine and urea hydrochloride. The symptoms complained of by the patient were swelling of the hands and feet, and numbness of the extremities. For a few hours there was some difficulty in respiration, associated with a tendency to fainting and some nervous perturbation. Later there developed an urticarial rash, covering the entire body, associated with intense itching. The attack subsided in about two days, leaving the patient with no alarming symptoms. The patient has had two previous experiences, and certainly should have informed her physician of her susceptibility. The case is cited simply to note one of the complications which may occur when using this drug.

#### THE NON-SURGICAL TREATMENT OF SPLANCHNOPTOSIS.

By Rolla Camden, M.D., Parkersburg, W. Va.

(Abstract.)

Without going deeply into the etiology, pathology, and symptoms and diagnosis of splanchnoptosis, attention is called to the necessity for treatment first along conservative lines of medicinal, personal and mechanical aids in this condition, rather than the surgical treatment usually offered.

Normally, the viscera are held in place by their respective supports, and intra-abdominal pressure, these being aided by proper poise of the body.

In splanchnoptosis the poise is bad, with the resulting loss of intra-abdominal pressure and of supporting visceral attachments.

Splanchnoptosis, divided into simple and complex: simple when there are no restraining adhesions and the organs are returnable to their normal positions; complex (extravisceral), when they are retained out of place by adhesions, and are not, therefore, returnable to their normal places.

Our endeavor should be to restore viscera to their normal places and maintain them there. This is to be accomplished by personal efforts of the patient by correction of posture, certain abdominal exercises, massage, vibration, and hydrotherapy, and medical treatment as indicated after gastric and enteric analyses.

Other means are external or mechanical, such as shoulder braces, abdominal supports, corsets, etc., *modified to suit the patient* and raising foot of the bed.

Attention is called to the difficulty of obtaining proper and constant support to thin individuals with small abdomens and prominent hip-bones, with suggestions for modifying the usual mechanical aids offered.

#### NEGLECTED RECTAL EXAMINATIONS.

By James A. McVeigh, M.D., Detroit, Mich.

(Abstract.)

A thorough rectal examination is a source of comfort to the patient and satisfaction to the doctor. It enables the latter to make a correct diagnosis and advise proper treatment.

Rectal examinations are not difficult, and should be ocular, digital, and instrumental. The physician should never accept the patient's diagnosis. This is not infrequently done, and such an unscientific procedure is usually productive of unsatisfactory result.

Indifference and carelessness on the part of members of the medical profession in conducting rectal examinations are being rapidly lessened, owing largely to the influence of the American Proctologic Society. The remedy lies in persistently reminding the men engaged in general practice of the necessity of making thorough rectal examinations whenever indicated, and the men who are following this special line of work are the ones who must be most active in conducting this campaign of education.

#### Book Reviews.

*The Healthy Girl.* By MRS. JOSEPH CUNNING, M.B., Lond., and A. CAMPBELL, B.A. London: Henry Frowde and Hodder and Stoughton.

This volume is intended as a manual of personal hygiene for school girls, and is well written, at once from the scientific and popular standpoint. It is divided into a series of chapters dealing with various bodily functions, and is illustrated by a series of twenty-one text cuts. It should be a useful guide to place in the hands of girls at the proper age.

## THE BOSTON Medical and Surgical Journal

Established in 1818

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, FEBRUARY 21, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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### THE MAN WHO STAYED AT HOME.

A RECENT popular melodrama which has met with well-deserved success at a local theatre describes the difficulties of a certain man whose duties demanded that he stay at home and assume the rôle of a slacker in order to do his share for his country. His position was a difficult and at times a painful one. He was misunderstood and abused. We all welcomed the last act which showed this man in his true light and made him the hero of the play.

A situation somewhat analogous to this exists in the medical profession of this country at the present time. A large number of physicians have been fortunate enough, and we use the term "fortunate" advisedly, to come within the draft age or to have already joined the Medical Reserve Corps or to be so situated that they have been able to offer their services to the Army and Navy or elsewhere. We have each

of us attended functions to honor these men on their departure to France to represent us in this great war. We have sung and laughed and presented gifts on such occasions, while each of us has sincerely envied our more fortunate brothers in uniform. While neither our friends overseas, who apparently are enjoying their hard work and new, though perhaps rough, experiences, nor we who stay at home with increasing burdens medical and financial, and decreasing supplies of sugar and coal, need any sympathy, there is a certain group of physicians who do need sympathy and encouragement. We refer to the superintendents and physicians of the sanatoria for consumptives, institutions for the insane and others in Massachusetts. The life of these men is, at the best, none too pleasant. They and their families live in an atmosphere of ill health and disease—physical or mental. The compensation they receive is inadequate, to say the least. They are only too often harassed and badgered by legislative committees, commissions to investigate and report, and so-called bureaus of efficiency and economy, whose knowledge of the conditions they so freely criticize is far too often a superficial and inadequate one. These men have lost many of their best and most efficient assistants and helpers, who have entered the Army or who have accepted more remunerative and pleasanter situations elsewhere. In the Massachusetts sanatoria for tuberculosis we are glad to note that, despite the pressure brought to bear, none of the superintendents has handed in his resignation. The same may be said of the State institutions for the insane, and in fact practically all of our State institutions. At some of our largest State asylums, normally having a staff of ten to twelve physicians, there are only three or four physicians left to do the work. In addition to this extra work thrown upon their shoulders by the decreased force at the institutions themselves, many of these men are serving on committees for reconstruction work and other war activities. The work that these men are doing in keeping these institutions up to the highest possible standard is exactly as important as the work of their more fortunate brothers overseas. It is absolutely essential that our campaign against consumption, for instance, should be continued at the very highest possible efficiency, so that when the time comes we can make provision and have the adequate machinery in operation and running smoothly to care for tuberculous soldiers from overseas.

This is the work that these superintendents are doing. They have stuck by their posts. They have assumed increasing burdens, and are cheerfully and quietly doing the duty that lies nearest to them, and are doing it well. They do not wear uniforms, nor do they seek nor receive recognition. They are the men who are staying at home, as did the man in the play. Let us hope that, sooner or later, the important service that they are doing for their country will receive the recognition it deserves.

### WAR-RISK INSURANCE.

IN recent previous issues of the JOURNAL we have commented editorially from time to time on the Government plan of war-risk insurance. There has been some uncertainty in this connection with reference to the question whether such insurance was intended to cover partial as well as total disability. The following letter from Colonel Straub to Dr. George W. Gay of this city, would seem to clear up the matter and settle it finally.

"Headquarters Northeastern Department,  
Department Surgeon's Office,  
25 Huntington Avenue, Boston.

February 4, 1918.

My dear Dr. Gay:

In the letter regarding insurance that I sent you on January 24, there seemed to be a discrepancy between the information that I gave you, and that which you had received from the Deputy Commissioner of Customs. This discrepancy is to be explained as follows:

Insurance of two sorts is provided by the United States Government for its soldiers who die or who are disabled. One kind of insurance is called 'compensation,' and practically replaces the former pension system; the other sort is called 'war-risk insurance.'

This 'compensation' is payable to the beneficiary, for the death of the soldier, or to the soldier for partial or total disability; it is automatic in its operation, since the soldier receives the benefits of compensation, without action on his part. This was the type of insurance for partial disability that I referred to in my letter of January 24 to you.

The war-risk type of insurance is taken out by the soldier himself for such amount as he chooses

up to \$10,000. The opportunity to apply for this form of insurance expires within 120 days of entry into active service. This 'voluntary' insurance is payable only for death or total disability.

The two types of insurance described above—one automatic, and called 'compensation,' and one voluntary—are entirely distinct, separate, and supplementary to each other. That is, the monthly payment under the 'compensation' to the soldier who is permanently disabled, is in addition to any payment which he may or may not have provided for himself by taking out voluntary war-risk insurance.

P. T. STRAUB,  
*Colonel, Medical Corps, U. S. A."*

### PNEUMONIA.

At a time when pneumonia is the chief cause of death in our armies at home and in the field, and when it is also particularly prevalent among our civil population, there is peculiar timeliness in the two leading articles of this week's issue of the JOURNAL. The paper by Dr. Shattuck and Dr. Lawrence summarizes the experience of the Massachusetts General Hospital in the treatment of this disease during the period from 1889 to 1917, and is a sequel to a similar paper by Drs. Coolidge and Townsend, published in 1889 and abstracted in the JOURNAL of June 27, 1889 (Vol. cxx, p. 643). Dr. Leen's paper is a study of strains of pneumococci, and of the serological treatment appropriate to different strains. The attention of physicians is directed to these two articles and to the progress which they connote in the knowledge and treatment of pneumonia.

### MEDICAL NOTES.

#### WAR NOTES.

DEATH RATE IN GERMANY.—The *Maasbode*, an Amsterdam daily, publishes a report of death rates in Germany from its Berlin correspondent. From the beginning of the war up to the end of 1916 there were over a million more deaths in Germany than is normally the case.



"For the first three years, the entire loss by mortality is said to have been 3,700,000. Thus instead of the normal increase of 2,400,000 there was on August 1, 1917, a decrease of 600,000 to which another 700,000 was added as a result of the decline in birth figures that still continues. The absolute decrease in the population after three years, therefore, would have been 2% of the number at the beginning of the war.

Other phenomena are to be expected for the near future. Instead of 14,000,000 the men between the ages of 17 and 45 will number only 12,700,000; and instead of 800,000, as now, the excess of women over men will be 2,100,000. It is not yet known how the war losses will be spread over the various ages, but it looks as if there will be 1100 women to every 1000 men of marriageable age. For these reasons, and in view of the fact that there will be a large number of invalids among the men, the marriage chances must be termed greatly reduced,—a fact which will in its turn produce further shiftings on the labor market, that on their part will again react on the population movement.

The war is not regarded—at any rate by experts—as harmful to infants. Natural feeding is far more general than formerly in all classes of population, and the results are good, as the food authorities apportion to the mother the food for the child, as, for example, 1 litre of milk per day. Infants have a right to 1 litre of milk daily, 50 grammes of sugar, and 200 grammes of flour a week and 1 pound of oatmeal a month, and can do well on that.

The food question becomes more difficult in the child's second year, as vegetables and fruits are scarce, at any rate in the large towns, so that the potato has to take the place of these. The counsel is now heard more frequently to restrict gymnastic exercises and, following the example of the marmots, to substitute the food that is lacking by sleep, and to see that the children get long nights of sleep."

**WAR RELIEF FUNDS.**—Following a period of relative recent inactivity, the sponsors of the New England Belgian Relief Fund have issued a new appeal for funds to continue the work of relieving destitution among Belgians, wheresoever dispersed. This work will continue in charge of Mr. Hoover. In issuing this fourth annual appeal Mr. John S. Codman, manager of the fund, points out that changed conditions regarding shipping give opportunity for larger shipments to the Belgians, and submits the fol-

lowing summary of the fund's financial operations from October, 1914, to December, 1917, inclusive (three years and three months):

RECEIPTS.	
Contributions .....	\$660,112.31
Interest .....	2,946.03
Total .....	\$663,058.34
DISBURSEMENTS.	
Expended for relief—	
Food and clothing .....	\$343,805.16
Cash distribution .....	246,167.95
	\$589,973.11
Expense of collection and administration of funds .....	37,293.09
Cash in hands of treasurer, Jan. 1, 1918 .....	\$27,768.10
Advanced to headquarters and covered by assets there (see note) .....	8,024.04
	35,792.14
Total .....	\$663,058.34
Note—Assets at headquarters on Jan. 1, 1918, as listed by the auditors, were as follows:	
Cash on hand .....	\$8,132.14
Inventory .....	9,280.30
Equipment .....	400.00
Accounts receivable .....	1,640.45
Insurance unexpired .....	49.87
	\$19,502.76
Accounts payable .....	1,525.94
	\$17,976.82

The New England Belgian Relief Fund, unlike many other relief organizations, has no special fund contributed to cover the necessary expenses of collection and administration. The figures above include all cash contributions and all disbursements for expense, such as advertising and other publicity, and managerial and clerical expense connected with the collection of money and its expenditure for relief purposes. It will be noted that the total expense is \$37,293.09, as compared with total receipts amounting to \$663,058.34, or less than six cents out of every dollar contributed.

On February 7, the totals of the principal New England War Relief Funds reached the following amounts:

Belgian Fund .....	\$638,468.14
Armenian-Syrian Fund .....	278,875.37
Polish Fund .....	96,387.73

**HEALTH CONDITIONS AT ARMY CAMPS.**—The Surgeon-General reports that for the week ended February 1 that there is a slight decrease in deaths from pneumonia. The total number of deaths was 178, pneumonia being responsible for 117 of these. The Regular Army, as usual, had the lowest death rate, with 29. There were 69 deaths in the National Guard and 87 in the National Army.

## BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending Feb. 9, 1918, the number of deaths reported was 312, against 290 last year, with a rate of 20.78, against 19.58 last year. There were 43 deaths under one year of age, against 42 last year.

The number of cases of principal reportable diseases were: diphtheria, 92; scarlet fever, 56; measles, 125; whooping cough, 62; typhoid fever, 2; tuberculosis, 54.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 9; measles, 2; tuberculosis, 5.

Total deaths from these diseases were: diphtheria, 6; scarlet fever, 2; measles, 1; whooping cough, 5; typhoid fever, 1; tuberculosis, 23.

Included in the above were the following non-residents: diphtheria, 4; measles, 1; tuberculosis, 2.

**APPOINTMENT OF DR. MCBAIN.**—Dr. William H. McBain of Malden has been appointed city bacteriologist and physician in charge of the Malden contagious hospital. He succeeds Dr. C. H. Staples, who has resigned.

**RESIGNATION OF DR. ALLAN MCLAUGHLIN.**—Dr. Allan J. McLaughlin, health commissioner of Massachusetts, has been recalled to Washington by federal authorities. He will become assistant surgeon-general in the public health service of the United States. As second in command he will have control of all the domestic health work in the United States, particularly with respect to the military cantonment areas. An appreciation of Dr. McLaughlin's work since he has been in this state appears in the daily press.

"Those who follow the cause of public health and sanitation in Massachusetts will regret to learn that our State commissioner of health, Dr. McLaughlin, has tendered to Governor McCall his resignation. Four years ago the State House was the scene of legislative turmoil over a proposed reorganization of the State Board of Health, which for more than a quarter of a century had faithfully served the State and won for it the highest place among all similar boards in America. Much ignorant and ill-timed criticism found vent, and eventually a new form of organization was enacted similar to one which had recently been successfully inaugurated in the State of New York. A Department of Health took the place of the old unpaid Board,

headed by a paid commissioner and a Public Health Council. With commendable painstaking and wisdom Governor Walsh chose for the new and trying position Dr. Allan J. McLaughlin of the United States Public Health Service, who had won his spurs by service in the Philippines, in Europe and in America.

From the outset Dr. McLaughlin showed great sagacity and a fine appreciation of the Massachusetts spirit. He surrounded himself by a council of sanitary leaders wisely selected, to whose opinions and advice he has always been ready to listen. He retained as the heads of such departments as sanitary engineering, food and drug inspection and chemistry the experienced workers of the old board. He has never played politics. He has inaugurated new methods of appointment of district health officers, new methods of dealing with old diseases, new methods of public health education. In short, he has kept the standard high and has maintained the best traditions of State service to the public health, for which Massachusetts has long been famous. And now he returns to the United States Public Health Service, by which he had only been lent to Massachusetts, in answer to an imperative call to duty at the office of that service in Washington. The care of the civilian population is second only in importance to that of the Army and Navy, and war conditions have put so many new and heavy burdens on the Federal Public Health Service that its surgeon-general has summoned Dr. McLaughlin to his immediate personal staff for active duty. He will take with him the respect and gratitude of the people of Massachusetts for his faithful and honorable service to the Commonwealth. His resignation also lays upon the governor a heavy burden in the choice of a worthy successor."

**THE NORFOLK DISTRICT MEDICAL SOCIETY.**—A regular meeting of the Society will be held at the Homeopathic Hospital, Evans Memorial Building, 80 E. Concord Street, Tuesday, Feb. 26, at 7 p.m. sharp. The program is as follows: Inspection of the hospital; Business; Communications; "The Venereal Problem—The State Department of Health Viewpoint," M. E. Champion, M.D., State Dept. of Health; "The Venereal Problem—The Army Viewpoint," Lieut. E. M. McKee, S.C.N.A.; "The Venereal Problem—The Navy Viewpoint," Lieut. H. P. Stevens, M.D., U.S.N.R.

## The Massachusetts Medical Society.

### STATED MEETING OF THE COUNCIL.

A STATED meeting of the Council of the Massachusetts Medical Society was held in John Ware Hall, Boston Medical Library, Wednesday, February 6, 1918, at 12 o'clock, noon. The President, Dr. Samuel B. Woodward, was in the chair and the following 67 Councilors present:

BARNSTABLE, O. W. Milliken.	T. F. Greene.
BRISTOL SOUTH, E. F. Curry.	R. W. Hastings.
ESSEX NORTH, T. R. Healy.	Bradford Kent.
R. V. Baketel.	T. J. Murphy.
E. H. Noyes.	J. W. Pratt.
J. J. O'Sullivan.	S. H. Rubin.
ESSEX SOUTH, R. E. Bicknell.	Victor Safford.
H. K. Foster.	R. D. Schmidt.
HAMPDEN, E. P. Bagg, Jr.	H. F. R. Watts.
R. A. Greene.	PLYMOUTH, Gillman Osgood.
E. A. Knowlton.	A. E. Paine.
MIDDLESEX EAST, E. S. Jack.	SUFFOLK, H. F. Vickery.
MIDDLESEX NORTH, W. B. Jackson.	E. S. Boland.
E. G. Livingston.	G. W. W. Brewster.
M. A. Tighe.	W. L. Burrage.
MIDDLESEX SOUTH, H. T. Baldwin.	E. A. Codman.
F. E. Bateman.	J. A. Cogan.
E. H. Bigelow.	F. J. Cotton.
C. H. Cook.	G. A. Craiglin.
A. W. Dudley.	E. G. Cutler.
Edward Mellus.	R. L. DeNormandie.
O. E. Mongan.	Albert Ehrenfried.
E. H. Stevens.	C. M. Green.
F. R. Stubbs.	J. L. Morse.
Julia Tolman.	Anna G. Richardson.
G. W. Whiting.	G. G. Smith.
Alfred Worcester.	R. M. Smith.
J. H. Young.	A. K. Stone.
NORFOLK, E. H. Brigham.	F. B. Talbot.
H. W. Dana.	D. H. Walker.
C. B. Faunce.	WORCESTER, R. W. Greene.
	David Harrower.
	A. G. Hurd.
	G. O. Ward.
	S. B. Woodward.
	WORCESTER NORTH, J. G. Henry.

The records of the last meeting were read and accepted.

Dr. Charles M. Green presented the following report of the Committee on Membership and Finance as regards membership, and it was accepted and its recommendations adopted.

#### REPORT OF THE COMMITTEE ON MEMBERSHIP AND FINANCE AS TO MEMBERSHIP.

The Committee on Membership and Finance makes the following recommendations as to membership:

1. That the following named Fellows be allowed to retire, under the provisions of Chapter I, Section 5, of the by-laws:

Jesse Howes Averill, of Campello, Brockton.  
Joseph Ward Battershall, of Attleborough.  
John Shanahan, of Peabody, with remission of dues to the amount of \$10.  
Samuel Finley Smith, of Indian Orchard, Springfield.

2. That the following named Fellows be allowed to resign, under the provisions of Chapter 1, Section 7, of the by-laws:

Francis Gilman Blake, of Minneapolis.  
Herbert Rutherford Brown, of Rochester, N. Y., with remission of dues to the amount of \$5.

William Sohler Bryant, of New York.  
Herbert Husklisson Cornforth, of Fitchburg.  
Henning Vitalis Hendricks, of Traverse City, Michigan.

Nellie Louise Lawrence, of Louisville, Kentucky  
John Alfred Parsons Millet, of Buffalo, N. Y., with remission of dues to the amount of \$5.  
Isalah Lovell Pickard, of Concord Junction, with remission of dues to the amount of \$5.

3. That the following named Fellows be allowed to change their district membership, without change of legal residence, under the provisions of Chapter III, Section 3, of the by-laws:

Carleton Eugene Allard, from Suffolk to Norfolk,  
Louis Adalore Oliver Goddu, from Norfolk to Suffolk.

Robert Battey Greenough, from Norfolk to Suffolk.  
For the Committee on Membership and Finance,

CHARLES M. GREEN, *Chairman*.

The petition of W. J. Brickley to be restored to the privileges of fellowship was acted on favorably. As a Committee to consider the petition of J. T. L. Brennan for restoration to the privileges of fellowship, the Chair nominated and the Council appointed: Leonard Huntress, J. B. O'Connor, J. P. McAdams; and for a similar petition from J. E. Clark: E. L. Young, Jr., J. D. Barney, E. R. Kelley.

On nomination by the President the Council appointed the following delegates:

To House of Delegates American Medical Association, for two years from June 1.

Principals: J. B. Blake, H. G. Stetson, L. F. Woodward.

Alternates: G. Osgood, L. A. Jones, J. F. Burnham.

To Annual Meetings of state medical societies:

Maine: C. W. Harlow, D. C. Dennett.

New Hampshire: D. N. Blakely, A. A. Taft.

Connecticut: C. L. Scudder, E. A. Bates.

Rhode Island: D. Harrower, J. H. Davenport.

The Treasurer read his report for the year 1917. Dr. Ray W. Greene read the report of the Auditor, including a letter of the certified public accountant. *Voted*, To accept the reports as read.

Dr. Charles M. Green, for the Committee on Membership and Finance, presented a budget and two motions. He explained that the Society had no longer a balance in the treasury; that foreseeing that there might be a deficit, his Committee had recommended a year ago that ten thousand dollars of the balance be placed in the permanent fund, and that by the action of the Council, five thousand dollars of this had been so invested; that for the previous year the excess of expenditure over the budget had been about twenty-seven hundred dollars. He urged the Society to live within its income, and the Committee had submitted a budget which he thought would accomplish that purpose. He pointed out there were three alternatives as to the disposal of the balance of twenty-five hundred dollars in the treasury: that (a) it should remain in the treasury; (b) be a dividend to district societies, or (c) be used for the annual dinner. On motion by Dr. Bateman the budget was accepted by vote.

Dr. Bateman submitted the Committee's motion, No. 1, amended by adding the following words at the end, "if requested." Motion: "That members of the Massachusetts Medical Society in active military or naval service of the United States Government, or of its allies, be exempted from the payment of annual assessments during the present war." The amendment was lost and the original motion was passed.

The questions of having an annual dinner and of how the annual dues should be remitted were discussed by Dr. Ward, Dr. Jack, Dr. Worcester, Dr. Bateman, Dr. Stone, and Dr. Green. Dr. Bateman *Moved*, That the dues that have already been paid for the current year be returned on request. This motion appeared to be lost by a voice vote, but when the vote was doubted, it was carried by a standing vote of 34 in favor and 15 opposed. On motion by Dr. Ward, it was *Voted*, That \$2500 be distributed *pro rata* to the district societies as a dividend, as in previous years, the annual dinner being omitted in 1918. By a standing vote, 33 were in favor and 19 opposed, and the motion was carried.

Dr. Green presented motion No. 2: "That the several district societies be urged to take measures to provide money wherewith to pay to the Massachusetts Medical Society the remitted dues of their members in active military or naval service, to the end that the activities of the Society may not be seriously curtailed," and it was passed unanimously.

Dr. J. H. Young for the Committee of Arrangements said that his Committee had prepared a tentative program for the annual meeting, but that in view of the votes of the Council, just passed, he would not read it, but he would like to have the day of the meeting definitely determined. On motion by Dr. J. L. Morse it was voted that the meeting be held on June 18 and 19. Dr. Mellus moved that the Committee of Arrangements be requested to arrange for a dinner to be paid for by those who attended it, and Dr. Stevens suggested that a postal card vote would show the number of Fellows who would attend such a dinner. The motion being put, was lost.

On nomination by the President, Drs. E. H. Stevens of Cambridge and A. R. Crandell of Taunton were elected to fill vacancies in the Committee on State and National Legislation caused by the resignations of Drs. W. H. Robey and J. S. Stone. The President read obituaries of ex-President Silas Dean Presbrey and Councilor John Quincy Adams.

The President spoke of the work being done by the State Department of Health to protect the community from venereal diseases. He said that the Department now has a bill before the Legislature for the establishments of clinics in venereal diseases, and asking for an appropriation of \$15,000. The Department now feels that it needs \$10,000 more in order to establish prop-

erly these clinics, and it would be glad to have the support of the Massachusetts Medical Society in furthering the bill before the Legislature. The President asked for the privileges of the floor for Dr. C. Morton Smith, and they were so voted. Dr. Smith said that the attitude of the public and of the profession toward venereal diseases had changed in recent times. At this time the profession should act in unison to favor a propaganda for the further abatement of venereal diseases. The State Department of Health has formulated a program of: (a) venereal disease reporting; (b) extension of facilities for making diagnosis and early treatment; (c) repressive measures; (d) education of the laity, especially young adults, as to what they should know. He thought a committee could be formed to work with the State Department of Health in the furtherance of these objects, and he moved that a committee of five be appointed by the President to consider the question of the prevention and cure of venereal diseases, and it was so voted. The President appointed this committee: Drs. C. Morton Smith, Paul Thorndike, F. H. Baker, W. C. Quinby, and Nelson C. Haskell.

Dr. A. K. Stone read the following report of progress of the Committee on Health Insurance, and asked for an appropriation of \$100 for this Committee:

The Committee on Health Insurance has attended hearings and has caused to be made stenographic notes, many of which have been published in THE BOSTON MEDICAL AND SURGICAL JOURNAL, showing the general temper of the hearings. The Massachusetts Commission on Social Insurance reported to the Legislature against social insurance and in favor of the extension of health work in the State. The Committee had hoped to be discharged, but House Bill 642 has been introduced and the Committee will have to remain active until the June meeting of the Society. All are notified that the hearing on this bill on Industrial Insurance will be held February 27, at 7 p.m.

The report was accepted, and the request was referred to the Committee on Membership and Finance, which receives, under the By-Laws, all requests for extraordinary appropriations.

Dr. Mongan presented the following preamble and resolution, and it was passed:

"Whereas, Recognizing the important rôle that food will play in winning the war for the Allies, and appreciating the greatness of the task which the Food Administration has assumed,

"Be It Resolved, That we, the Council of the Massachusetts Medical Society, most urgently appeal to the members of our society to use every effort as a society and individually to bring home to the people of Massachusetts the grave necessity of conserving food."

Adjourned at 1.52 p.m.

WALTER L. BURRAGE,  
Secretary.

## TREASURER'S REPORT.

STATEMENT SHOWING THE ASSETS AND LIABILITIES OF  
THE MASSACHUSETTS MEDICAL SOCIETY  
DECEMBER 31, 1917.

## Schedule A

ASSETS.		LIABILITIES.	
<i>Cash</i>		<i>Endowment Funds</i>	
New England Trust Co. ....	\$1,054.14	Shattuck Fund (G. O. Shattuck, 1854. Balance, 1866) ..	\$9,166.87
Old Colony Trust Co. ....	3,140.14	Phillips Fund (Jonathan Phillips, 1860) .....	10,000.00
	<u>\$4,194.28</u>	Cotting Fund (B. E. Cotting, \$1000, 1876, 1881, 1887.) ....	3,000.00
<i>Investments</i>		Emmons and Associates Fund	589.71
Shattuck Fund		Fund for Professorship of Military Medicine .....	300.00
Annuity Policy Mass. Hosp. Life Ins. Co. ....	9,166.87		<u>\$23,056.58</u>
Phillips Fund			
Mass. 3½% Gold Bonds ..	10,000.00	<i>Surplus</i>	
Cotting Fund		Balance January 1, 1917 ....	23,204.58
Deposit in Institution for Savings in Roxbury and Vicinity .....	1,000.00	Deficit for the year	3,727.77
Deposit in Provident Institution for Savings in the Town of Boston .....	1,000.00		<u>26,932.85</u>
Deposit in Suffolk Savings Bank for Seamen and Others, Boston .....	1,000.00		
Fund for Professorship of Military Medicine			
Liberty Bonds—Second Issue 4% .....	300.00		
Permanent Fund			
Annuity Policy of Mass. Hosp. Life Ins. Co. ....	11,253.80		
Mass. 3½% Gold Bonds ..	6,000.00		
Deposit in Franklin Savings Bank of the City of Boston	1,074.48		
Liberty Bonds—First Issue 3½% .....	5,000.00		
	<u>\$45,794.65</u>		
Total .....	<u>\$49,988.93</u>	Total .....	<u>\$49,988.93</u>

## STATEMENT SHOWING THE PROFIT AND LOSS ACCOUNT OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE YEAR ENDING DECEMBER 31, 1917.

## Schedule B

CREDIT.	
<i>Dues paid to District Treasurers</i>	
Barnstable .....	\$155.00
Berkshire .....	380.00
Bristol North .....	315.00
Bristol South .....	665.00
Essex North .....	820.00
Essex South .....	1,035.00
Franklin .....	185.00
Hampden .....	1,160.00
Hampshire .....	295.00
Middlesex East .....	340.00
Middlesex North .....	559.00
Middlesex South .....	2,260.00
Norfolk .....	2,504.00
Norfolk South .....	285.00
Plymouth .....	495.00
Suffolk .....	3,355.00
Worcester .....	1,325.00
Worcester North .....	430.00
	<u>\$16,593.00</u>
Dues paid to Treasurer .....	819.00
Dinner tickets .....	687.00
Income Shattuck Fund (Income not collected)	
Income Phillips Fund	
Massachusetts 3% Bonds .....	350.00
Income Cotting Fund	
Interest Institution for Savings in Roxbury and Vicinity (not collected)	
Interest Provident Institution for Savings (not collected)	
Interest Suffolk Savings Bank (not collected)	
Carried forward .....	<u>\$18,449.00</u>

Brought forward .....		\$18,449.00
Income Permanent Fund		
Annuity policy Mass. Hosp. Life Ins. Co. (not collected)		
Massachusetts 3½% Bonds .....	\$210.00	
Interest Franklin Savings Bank (not collected)		
Liberty Bonds 3½% First Issue .....	88.47	298.47
Emmons and Associates Fund		
Donations for salary and expenses of Society's agent .		1,373.21
Homeopathic Medical Society		
Donation for Workmen's Compensation Committee ....		200.00
Income from Deposit in Banks		
New England Trust Co. ....	171.20	
Old Colony Trust Co. ....	181.31	302.51
Total .....		\$20,623.19

General Expense	DEBIT.	
President's expense .....	\$115.76	
Secretary's expense .....	445.70	
Treasurer's expense .....	150.50	
Librarian's expense .....	64.23	
District Treasurer's expense .....	1,829.74	
Supervisors' expense .....	29.33	
Censors' expense .....	313.50	
Rent .....	750.00	
Salaries .....	1,605.00	
Delegates' expense .....	27.12	\$4,890.93
Boston Medical and Surgical Journal		
Guarantee .....	9,479.25	
Editor's salary .....	300.00	
Total .....	9,779.25	
Less rebate for the year 1918 .....	500.00	9,279.25
Committee expense		
Arrangements .....	2,900.53	
Membership and Finance .....	4.95	
Ethics and Discipline .....	5.64	
State and National Legislation .....	118.41	
Public Health .....	174.33	
Workmen's Compensation .....	1,798.99	
Health Insurance .....	127.72	5,125.57
Annual Dividend to District Societies .....	2,500.00	
Defence of malpractice suits .....	1,107.65	
Cotting Fund .....	134.35	
Emmons and Associates Fund		
Salary and expense of Society's agent .....	1,373.21	\$24,350.96
Deficit for the year .....		\$3,727.77

ARTHUR K. STONE,  
Treasurer.

#### AUDITOR'S REPORT.

In the absence of my auditor colleague, Dr. Ayer, I have made an examination of the books of the Treasurer of the Massachusetts Medical Society, with the aid of a certified public accountant who reports as follows:

Boston, February 1, 1918.

Dr. R. W. Greene,  
Auditor, Massachusetts Medical Society,  
21 West St., Worcester, Mass.

Dear sir:—

In accordance with your instructions I have audited the books and accounts of the Massachusetts Medical Society for the year ending December 31, 1917, and enclose herewith

*Schedule A* Statement Showing the Assets and Liabilities of the Massachusetts Medical Society, December 31, 1917.

*Schedule B* Statement Showing the Profit and Loss Account of the Massachusetts Medical Society for the year ending December 31, 1917.

The cash on deposit in the banks has been reconciled with the bank accounts and found to be correct. The disbursements have been properly verified, and all

known cash receipts during the year have been properly credited on the books.

Income from the Shattuck Fund, invested in an annuity policy in the Massachusetts Hospital Life Insurance Company, income from the Cotting Fund, deposited in the Institution for Savings in Roxbury and Vicinity and the Suffolk Savings Bank for Seamen and Others, and income from the Permanent Fund, invested in an annuity policy in the Massachusetts Hospital Life Insurance Company, and deposited in the Franklin Savings Bank of the City of Boston, were not received until after January 1, 1918, and will be treated as income for the year 1918.

I have not examined any of the securities belonging to the Society.

Yours very truly,  
HORACE C. HARTSHORN,  
Certified Public Accountant.

On January 31st, 1918, I personally examined the securities belonging to the Society and found them all, as listed on the books of the Treasurer, in a safe deposit box of the Old Colony Trust Co.

Respectfully submitted,  
Worcester, Feb. 6, 1918. RAY W. GREENE, Auditor.

## BUDGET.

The Committee on Membership and Finance submits and recommends the adoption of the following budget for the fiscal year 1918:

<b>Income</b>	
Estimate of the Treasurer .....	\$18,745
<b>Appropriations</b>	
Salaries of officers:	
Secretary .....	\$900
Treasurer .....	500
Librarian .....	400
Editor .....	300
Official expenses of officers:	
President .....	100
Secretary .....	600
Treasurer .....	140
Librarian .....	60
District Treasurers .....	1,200
Censors .....	320
Supervisors .....	80
Delegates to meeting of A. M. A. ...	100
Rent of accommodations at the Medical Library .....	750
Boston Medical and Surgical Journal (appropriated in October) .....	9,000
Defense of malpractice suits .....	600
Shattuck Lecture .....	200
Cotting Lunches .....	200
Standing Committees:	
Committee of Arrangements (annual meeting) .....	500
Membership and Finance .....	5
Ethics and Discipline .....	25
Medical Education and Medical Diplomas .....	25
State and National Legislation ...	250
Public Health .....	75
Contingent expenses .....	65
	16,245
Balance { to remain in treasury, or	
{ for dividend to District Societies or	
{ for annual dinner .....	2,500
	\$18,745

The Committee recommends the passage of the following motions:

1. That members of the Massachusetts Medical Society in active military or naval service of the United States Government, or of its Allies, be exempted from the payment of annual assessments during the present war.

2. That the several District Societies be urged to take measures to provide money wherewith to pay the Massachusetts Medical Society the remitted dues of their members in active military or naval service, to the end that the activities of the Society may not be seriously curtailed.

For the Committee on Membership and Finance,  
CHARLES M. GREEN, *Chairman*.

### Obituary.

#### WILLIAM HENRY LATHROP, M.D.

DR. WILLIAM HENRY LATHROP died at his home in Lowell, December 22, 1917, at the age of 77. He was a graduate of the University of Pennsylvania medical department, in the class of 1865, having served previously as acting assistant surgeon in the United States Army. He

became editor of the *Detroit Review of Medicine and Pharmacy* the year of his graduation and held the position until 1873; then he served three years as physician to the Detroit Retreat for the Insane, moving to Lowell in 1876 and joining the Massachusetts Medical Society. From 1892 to 1900, he was a member of the Lowell School Board.

#### CHARLES DEXTER SAWIN, M.D.

DR. CHARLES DEXTER SAWIN of Winter Hill, Somerville, died at the Relief Hospital, Boston, February 8, 1918.

Dr. Sawin was born in Charlestown, June 10, 1857, graduated S.B. from the Massachusetts Institute of Technology in 1878 and from the Harvard Medical School in 1883. Then he served as house officer at the Boston City Hospital, becoming physician to the State Prison in 1884, and serving there until 1891. He did much work in accident cases of a medico-legal character. In 1907 he moved to Somerville. In 1885 he married Katherine F. Cole of Charlestown, who died two years later, and in 1893 he married Mabel A. Beattie, of Lancaster, N. H.

He was a Fellow of the Massachusetts Medical Society, and a member of the Boston Medical Library.

#### HORATIO FRANKLIN COPELAND, M.D.

DR. HORATIO FRANKLIN COPELAND, a retired Fellow of the Massachusetts Medical Society, died at his home in Whitman February 8, 1918, of cerebral hemorrhage.

He was born in Easton, November 15, 1842, and graduated from Harvard Medical School in 1865, serving then as U. S. Assistant Surgeon at the smallpox hospital at Bermuda Hundred. He joined the Massachusetts Medical Society in 1878 and settled in general practice at Whitman. He was a member of the American Medical Association.

#### RECENT DEATHS.

DR. W. B. BUELL of San Francisco was shot and killed in his office by Felice Prato, former sergeant in the Italian Army. Dr. Buell was chief surgeon of the Union Iron Works Hospital. No motive is known for the crime.

DR. CARROLL G. VERRETT, formerly of Boston, died recently at his home in Norfolk, Va. Dr. Verrett's son, Dr. William Verrett, died in France last June while serving with the Harvard Medical Unit. Dr. Verrett is survived by his widow, four daughters and five sons.

CHARLES SEYMOUR BRADLEY, M.D., died suddenly of heart disease, January 10, 1918, at his home, 71 Walnut Ave., Roxbury. He was born in Newtown, Conn., October 6, 1853, receiving his degree of M.D. from the University of New York in 1873. He settled first in Westboro, Mass., where he practised for 18 years, joining the Massachusetts Medical Society in 1883. He was married in 1878 and is survived by his widow.



# RATIONAL THERAPY

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**BULGARA TABLETS—H. W. & D.—Bacillus Bulgaricus.**

For modifying the flora of the intestines by changing the chemical condition of the intestinal content.

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To supply deficient important internal ovarian secretion.

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To increase the fluidity of human bile.

FURTHER INFORMATION UPON REQUEST

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that we believe we owe it to our medical friends to direct their attention to the special value of this product as a local application, *as well as* for surgical lubrication.

No claim is made that K-Y Lubricating Jelly will act with equal efficiency in all cases; but we do know that the physician will secure such excellent results in so many cases, that we feel justified in recommending its routine use.

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can be relieved in the great majority of cases  
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In these patients, INTEROL softens the feces, keeps them plastic and mouldable, and by supplying the lubrication essential to their easy passage, assures free and regular evacuation without straining or discomfort.

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*Booklet and literature on "Chronic Constipation of Women," and samples, to physicians only.  
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3-12

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17-18

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5-4

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8-1

## MUSCLE TRAINING IN THE TREATMENT OF INFANTILE PARALYSIS

BY

WILHELMINE G. WRIGHT

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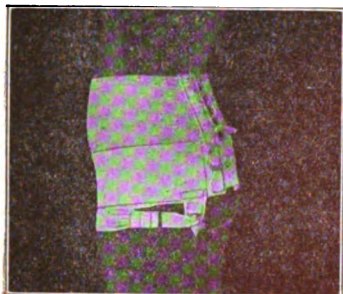
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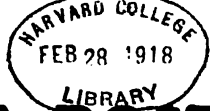
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## CONTENTS

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### MEDICINE.

#### ENTAMOEBIA HISTOLYTICA INFECTIONS.

MAOAdam (*The Lancet*, Jan. 5, 1918) discusses the prevalence of entamoeba histolytica infections among British troops in India and Mesopotamia, and summarizes his investigations as follows:

1. The general protozoal findings in the stools of men invalided from active service in Mesopotamia, apart from cases of acute and convalescent dysentery, are more numerous than the records of Wenyon and of Dobell show to exist among the troops from the Eastern Mediterranean war area who have been invalided to England.

2. The incidence of histolytica among the Mesopotamian troops is especially high; 13.6% of 351 “non-dysentery” patients in a general hospital, and 17.8% of 595 men stationed in a convalescent depot were found on a single stool examination to be harboring the cysts of entamoeba histolytica. On applying Dobell's appropriate “figure for correction” to those results obtained on the “single examination” method, we find that at least 83% of the troops who have been in Mesopotamia are “healthy” or “unhealthy” histolytica carriers.

3. The figures for both hospital patients and men of the convalescent depot lead to the conclusion that the number of carriers is greater among those who have shown symptoms of intestinal disturbance than among those who have been unaware of their protozoal infection.

4. Of 90 histolytica carriers giving a past history of dysentery or diarrhea, one-third had suffered from simple diarrhea only, another third had had recurrent diarrheal attacks in addition to acute dysentery, while 47% had had intestinal symptoms of so trivial a nature that they had not been admitted to hospital for treatment.

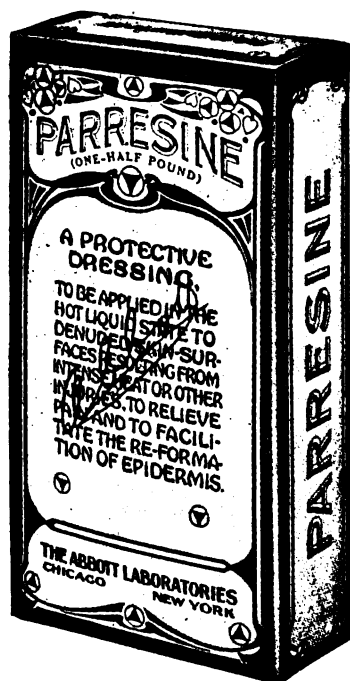
5. The segregation of any but the “gross” human carrier is an impossible and futile task; while, in view of the fact that light and intermittent infections appear to be present in at least one-third of the troops, it is a moot point whether the isolation of a few gross carriers is going to be of much avail from the point of view of prophylaxis.

6. A comparison of the small number of emetine-treated cases among the histolytica carriers who gave a history of dysentery but had not recently suffered from the disease, with the number of recent dysentery convalescents, practically all of whom had received courses of emetine treatment, goes to show that this drug, although alleviating the dysenteric symptoms, tends only in a small degree to lessen histolytica cystic infections.

7. This wide prevalence of infection due to entamoeba histolytica, coupled with the fact of the proved ineffectiveness of our present therapeutic methods for the destruction of cysts, throws considerable doubt on the utility of attempting to “clear,” by a series of protozoological examinations of the stools, only those cases of amebic infection which have suffered from so marked an intestinal disturbance as to have resulted in their receiving hospital treatment.

8. Various data have been cited showing that factors leading to the production of intestinal irrita-

(Continued on page vi.)



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(Continued from page 10.)

tion, mild though it be, are also associated with the reappearance of histolytica cysts in the stools. Such factors are present under the conditions that prevail in the convalescent depot, and doubtless exist to a much greater extent during active service in the field, in sharp contrast to the conditions of a hospital régime.

These observations point to a possible fallacy which will have to be considered in any investigation into the duration of the infectivity of histolytica carriers, as well as on the therapeutic efficacy of any drug for the "curing" of those cystic carriers, if the protozoological examinations be confined solely to the period during which the patients are living under hospital conditions. [J. B. H.]

### TREATMENT OF THROMBOSIS.

MARRIS (*British Medical Journal*, Dec. 22, 1917) believes that venous thrombosis such as frequently occurs in the typhoid group of fevers can be speedily absorbed by the intravenous injection of sodium citrate. He describes the method of administering this and presents his results in tabular form. He believes that infinitely better results are obtained by the administration of the citrate intravenously than by the mouth. [J. R. H.]

### SURGERY.

#### THE TREATMENT OF FRACTURES IN WARFARE.

LANE (*The Lancet*, Jan. 5, 1918) discusses the treatment of fractures in warfare and summarizes his views as follows:

1. That only in very exceptional circumstances is it advisable to fix fragments of broken bones together by means of plates and screws while the wound is very foul. Should the surgeon have to resort to their use he must be most careful to see that perfect drainage is established in order to avoid progressive necrosis of the fragments to which the screws are attached.
2. That if, for certain reasons, such a procedure is deemed necessary, screws should not be inserted near the broken extremities but as far from the seat of fracture as possible.
3. That it is advisable to postpone operative interference till the wounds have healed for some considerable time and until the tissues are, in all probability, free from organisms. Preparatory to operation every means should be taken to determine the presence or absence of organisms in the scar tissue.
4. That if any apparently septic focus is observed during an operation, a culture and a vaccine should be obtained from it and employed at once should symptoms of infection of the wound develop.
5. That, should there be any definite suspicion of the presence of latent sepsis, irrigation by Carrel's method, which is the best I have seen, must be adopted at once. If not, the wound should be closed completely at the time of operation.
6. That every attempt should be made to avoid any shortening of the limb or to reduce it to a minimum. On no consideration whatever should any bone be removed. Accurate apposition can always be obtained if the surgeon knows how to bring it about. This is effected by manipulation with suitable instruments. To attempt to overcome overlapping of fragments in an old malunited fracture by traction on the limb in its length is perfectly futile.
7. That the apposition of the whole areas of the broken ends is not necessary, since the interval will fill up subsequently if suitable means be adopted. Fragments of bone or callus should be saved and employed to fill any interval between the pieces of the shaft.
8. That much heavier steel plates are required in the class of malunited fractures produced by pro-

(Continued on page viii.)



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(Continued from page vi.)

jectiles than are usually employed in the less comminuted fractures of civil life.

It is most important that the joints which are in relation with the fractured bone shall be moved as soon as possible after the operation in order to avoid that stiffness and limitation of movement which so often complicate these fractures. This is especially the case in the joints of the knee, ankle and foot. In order to obviate this trouble, without risking the security of the junction, the plates which are employed to retain the fragments in position must be as long and as strong as circumstances will permit. They should be secured by as many screws as possible. The plates that are often employed are quite inadequate for the purpose.

9. That, providing no strain shall be exerted on the junction likely to develop non-union, the sooner the patient who has been operated on for fracture of one or more long bones of the leg is got up and about, the more bone will be deposited and the more rapid will be the repair at the seat of fracture. For this purpose a good ambulatory splint is a necessity.

10. That, should the interval between the fragments be so considerable that union is not likely to take place, even after prolonged congestion, brought about by the use of an ambulatory splint, the fragments should be secured in perfect alignment by a plate fixed vertically behind the centre of the shaft. When this has been done a portion of one of the fragments, which is usually equal in bulk to a third of the total sectional area of the shaft, can be sawed and chiselled off and secured over the interval between the fragments, any piece of bone removed to accommodate the graft in the other fragment being fitted to occupy such existing interval as may be left between the bones.

11. That most of the failures of bone grafting for extensive loss of substance are due to the surgeon depending on the unsatisfactory grip which the graft alone can be made to exert upon the fragments of the shaft. The essence of success depends on the absolute immobilization of the fragments of the shaft on one another, and of the graft upon those fragments. It is obviously ridiculous to attempt to retain the fragments of bone in a useful position by bone grafts alone in these malunited fractures produced by projectiles, as it is in any fracture in which the material securing the fragments in position has to bear considerable strain.

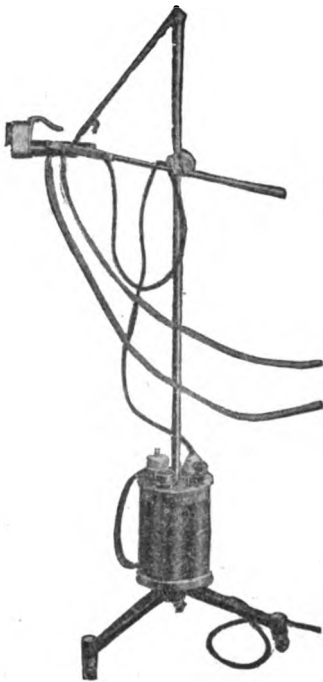
12. That a great deal has been talked about the screws and plates acting as foreign bodies if used in simple fractures and producing a rarefying osteitis around them. Should such rarefying osteitis exist it is undeniable evidence that the technic of the operator is faulty and not the procedure. The remedy is in the hands of the surgeon, who must improve his methods. Frequent failures in unskilled hands have led many to attribute their want of success to the employment of steel plates and screws, and to attempt to avoid sepsis by using other and much less effective means.

13. That while the operative treatment of compound fractures produced by projectiles is the most important of all surgical procedures in warfare, it is well to remember that it demands a degree of asepsis, mechanical skill, resource and judgment in excess of that required for other operations for war conditions.

14. That besides that of sepsis, usually introduced from without, though occasionally developed from a latent infection, hemorrhage is the chief risk which is associated with these operations. This can be best avoided by the use of very powerful hemostatic forceps, which are left in position in the wound for as long as possible during the course of the operation. A ligature is rarely required.

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[J. B. H.]



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"Wounds of the Knee Joint." MAJOR KENDALL EMERSON, R.A.M.C.

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## TABLE OF CONTENTS

February 28, 1918

ORIGINAL ARTICLES	EDITORIALS
BACK TROUBLES. A REVIEW OF THE PRESENT SITUATION FROM A SERIES OF HOSPITAL CASES; AND A DISCUSSION OF MUSCULO-LIGAMENTOUS CAUSES. <i>By Herman W. Marshall, M.D., Boston</i> 279	CENTRALIZATION OF AUTHORITY VERSUS UNPAID BOARDS OF TRUSTEES. .... 305
LITHIASIS WITH BILATERAL RENAL INVOLVEMENT. <i>By W. F. Braasch, M.D., Rochester, Minn.</i> ..... 292	STATE QUOTAS OF BABIES TO BE SAVED DURING CHILDREN'S YEAR. 306
	MEDICAL NOTES ..... 307
CLINICAL DEPARTMENT	CORRESPONDENCE
FRACTURE OF THE NECK OF THE FEMUR: REPORT OF THREE CASES. <i>By Charles E. Ayers, M.D., Worcester, Mass.</i> ..... 298	VACCINATION CERTIFICATES. <i>Samuel B. Woodward.</i> ..... 312
SOCIETY REPORT	MISCELLANY
AMERICAN UROLOGICAL ASSOCIATION. MEETING OF NOVEMBER 15, 1917. .... 300	HENRY MAUDSLEY, M.D. LOND., F.R.C.P. LOND., LL.D. EDIN. .. 308
	RETIREMENT OF GENERAL KROGH. .... 310
BOOK REVIEWS	MEDICAL MATTERS IN MESOPOTAMIA. .... 311
Operative Gynecology. <i>By Harry Sturgeon Crossen, M.D.</i> .... 304	A MEDICAL DRAMATIST. .... 312
Candy Medication. <i>By Bernard Hantus, M.D.</i> ..... 304	NOTICES, ETC. .... 312

### Original Articles.

#### BACK TROUBLES. A REVIEW OF THE PRESENT SITUATION FROM A SERIES OF HOSPITAL CASES; AND A DISCUSSION OF MUSCULO-LIGAMENTOUS CAUSES.

BY HERMAN W. MARSHALL, M.D., BOSTON.

The amassing of quantities of clinical observations and methods pertaining to back troubles continues with medical progress. And specialists succeed in relieving patients now through their accurate knowledge of special details, who otherwise would continue to have backaches.

Confusion also grows simultaneously in degree and extent with unwieldy accumulations of medical data relating to backs; so also many patients fail to have their troubles relieved promptly now because they are treated by special methods of extremely limited ranges of efficiency.

Medical progress accordingly should be recognized as one distinct thing and the welfare of patients may be quite a different one, especially immediate welfares of those suffering at the present time.

For while carefully planned and executed scientific clinical studies help medical progress and presumably will be of benefit to patients sometime in the remote future, yet they diminish the chances of patients now for successful care when they mainly add to existing widespread confusion.

It would be much better for those who are sick now, perhaps, if all original scientific investigation could be stopped awhile, and all investigators set at work sorting over and rearranging facts that have collected, but which remain poorly understood. Then, on completion of repeated sortings and fittings together of numberless isolated facts into natural groups, according to well-known physiologic and anatomic principles, through impartial critical studies, presumably more correct complete diagnoses and more efficient rational treatments would occur more generally.

The group of present-day sufferers is far too large and too important a one to be neglected as it is; also while advantages of scientific medical research upon the majority of small topics remains so doubtful under the existing conditions.

It is interesting to observe that the bulk of knowledge at present represents an accumulation of numberless scientific studies on definite, easily managed special topics, as the latter have been followed carefully in their various ramifications and bearings.

Original investigators naturally are anxious to show how great the clinical importance of their selected subjects can be; and rarely do they dwell with equal enthusiasm on the insignificance, under other conditions, of features they have been working on. Yet both views are indispensable for fair estimates of average normal values. Therefore, when the overwhelming predominance of one-sided extreme clinical studies is considered there can be little wonder that they

obscure effectually the usual significance of various factors which enter into complicated back troubles.

Another point which should be noted is the matter of group diagnoses and treatments. These have been tried recently to improve chances of present patients, and in a limited number of instances desirable breadths of view have thus been combined with unusual accuracy of special details. Undoubtedly some results have been better than those attained by single physicians.

In fairness, however, it must be admitted that combined defects of groups of extreme specialists outweigh advantages of these combinations very frequently; and that in consequence very many patients are worse off than if they adhered to one medical adviser.

Again, it is interesting to compare other very simple and very elaborate methods of treatment, as, for illustration, the abbreviated ones which accident insurance companies employ with injured workmen, in contrast to extensive diversified therapeutic procedures carried on by large scientifically conducted hospitals. It will be seen there are benefits and dangers in simplicity, as well as possibilities of unnecessary care and too much attention paid occasionally to outpatients' back complaints in hospitals.

The writer's conclusions from the foregoing set of facts are that steps in medical progress of greatest importance immediately for patients are impartial critical reviews of already collected facts and data. Rearrangements of masses of unclassified, apparently contradictory, clinical observations are absolutely necessary before adequate working theories are obtained that will explain satisfactorily many individual peculiarities that come to notice, or allow most intelligent satisfactory treatments.

Accordingly a series of hospital cases has been selected to assist in an impartial critical review of some of the features and peculiarities of the present stage of understanding and care of troubles of the back.

Diversified matters discussed in this paper will be taken up under the following main headings: (A) Theoretical Considerations; (B) Practical Results of Having Correct Theoretical Conceptions; (C) Musculo-ligamentous Back Troubles and Comparisons with Other Back Conditions; (D) An Analysis of a Series of One Hundred Hospital Cases of Back Troubles.

#### (A) THEORETICAL CONSIDERATIONS.

*Postural Variations in Spines and Anatomic Variations in Vertebrae*—Backaches are recognized as being due very often to these two underlying causes. The first relates to slightly variable relationships among groups of bones in vertebral columns; and the second deals with developmental peculiarities of bones of one person as compared with corresponding ones in other individuals; but peculiarities of muscles and ligaments enter with equal clinical importance,

although not mentioned in these anatomical terms, in each instance of postural spinal peculiarity or anatomic vertebral variation.

After acceptance of these two causes for backaches, observers feel an involuntary surprise when many striking cases of vertebral variations or postural peculiarities are encountered with no abnormal symptoms at all. A natural tendency then arises to discount the importance of anatomic features and to conclude hastily that they mean very little or nothing.

Casual observers haven't time to study out the fact, that it is the *physiological balance* always between bones and their musculo-ligamentous supports, which determines development or non-development of pathological manifestations; and that it is never safe to base judgments on anatomic peculiarities alone no matter how great they are.

True relationships can be summarized correctly as follows from careful inspection of many available peculiarities and existing conditions: All anatomic variations of vertebrae possess no practical significance whatever as long as their physiologic stays remain adequate, and many persons presumably go through life carrying anatomic anomalies with practically no trouble at all. Bony peculiarities, nevertheless, always remain latent menaces which are liable to assume pathological importance at any time the flexible supports sufficiently weaken and stretch.

Postural variations in spines may mean very much or practically nothing. Their presence proves that at some past time muscles and ligaments have stretched, if these variations do not represent congenital ones; but they do not indicate in any way of themselves whether subsequent increments of musculo-ligamentous strengths have, or have not, compensated perfectly for changes in postures. They do not indicate whether ligamentous stretchings which produced them were slow, continuous, or interrupted; whether recent rates of ligamentous weakening have become rapid suddenly, or whether there have been no recent changes at all. It is impossible to estimate strengths of backs safely from variations of postures alone; and postural peculiarities, like vertebral anomalies, possess no practical significance worthy of consideration as long as supporting muscles and ligaments are adequate for their tasks. The *physiologic balance* between degrees of postural variations and strengths of flexible physiologic back supports furnishes the only reliable index of functional efficiency of different postures.

*Hypertrophic Arthritis of the Spine*—Hypertrophic or osteo-arthritis of the spine represents the sum of all transient mechanical stresses and strains; and all different vascular influences acting on it which shift from time to time. It is the record on the bones, particularly around joints and ligamentous attachments, of these combined influences in the individual's past life. It includes effects of various past in-

fections, mild and severe; metabolic vascular peculiarities and variations from time to time; all mechanical injuries as well as ordinary pressures and strains which bones are subjected to more or less continuously. It is not a specific trouble.

If one physician chooses to emphasize only some particular infection of the past or present time, at least no one can disprove very convincingly the possibility of his contentions. The same holds true for enthusiasts who are convinced of the great importance of past or present metabolic disturbances, or effects of unknown internal secretions. Physicians with strong leanings toward mechanical origins for hypertrophic changes can always point confidently to continuous strains sustained as a part of active life, and to innumerable traumata of greater or less severity.

However, it is impossible to pick out any long period in any active person's existence when his joints, bones, muscles and ligaments are not being subjected simultaneously to various mechanical strains, to various infectious influences, as are indicated by constant presence of excreted bacterial products in the urine and to various metabolic products circulating in the blood, derived from vital activities within the person's own tissues. Always, therefore, should hypertrophic arthritis be considered the total sum of a large number of mixed causes and never purely a specific disease.

Sometimes an unusually lively bacterial infection produces acute joint inflammations and is designated as infectious arthritis, that is, if the person is young. But if it happens to come late in life, after accumulated bony changes have become appreciable, then probably it will be termed hypertrophic arthritis, although the underlying cause remains of the same nature as the earlier attack of infectious arthritis in youth. At least the diagnosis of infectious arthritis is found practically to be made seldom in the aged.

A condition of affairs similar to the one existing between infectious arthritis and hypertrophic arthritis also is observed between musculo-ligamentous strains and hypertrophic arthritis. Diagnoses are likely to be "back strains" until hypertrophic changes are seen; then the latter obscure the former, although musculo-ligamentous weaknesses continue to be main causes for pathological symptoms. In hypertrophic arthritis, as with postural variations in spines or anatomic variations in vertebrae, structural bony features, which are easily recognized, obscure other equally important but more difficultly understood causes.

Thoughtful consideration of available data on this subject leads to the following conclusions:

"Hypertrophic arthritis" is an overworked term which means little or much according to the manner bony overgrowths have developed.

It is never safe to estimate the importance of any condition from existing degrees of bony

overgrowths alone; for serious disability may continue with only slight bony changes; and surprising recoveries of normal functions are compatible with extensive bony hypertrophies.

Hypertrophic arthritis represents the *result* of many previously acting causes usually more than it indicates the underlying *cause* of present pathological back symptoms.

A physiologic balance is maintained between vital processes going on within bones and outside influences, namely, those exerted on bony structures through mechanical activity and injuries, vascular and nervous channels.

Hypertrophic changes help to show with what degree of success bones have maintained their normal functions and appearances through past difficulties. It is true they roughly suggest probable future rates of change; but such osseous hypertrophies can never be relied on very completely, however, as indicators, since outside acting influences sometimes are abruptly changed, thereby altering, favorably or unfavorably, vital processes within bones, together with future hypertrophies and future functional efficiencies.

Bony hypertrophies, aside from the actual mechanical limitations they cause occasionally in joint motions, or their rare pressure effects on nerves, mean practically nothing themselves as long as other factors in the physiologic balance continue favorable in the future for bones and ligaments.

*Limitations of Nomenclatures Used in Diagnosis of Back Lesions*—Diagnoses are very commonly made correctly, but they refer often to such small special features that they do not have much significance. To illustrate this point one hundred records from a very large series of back cases were selected. Diagnoses from hospital records showed hypertrophic arthritis in thirty-three cases; infectious arthritis in thirty-four cases; back strains in thirty-three cases. These hundred records were looked through carefully by the writer for occurrences of variations in vertebrae of sufficient magnitude to be mentioned in x-ray findings; and for definite traumata associated with onsets of back symptoms.

Enthusiasts might re-classify these hundred cases in other ways. Nineteen might be considered "traumatic back troubles." Fourteen might be thought of as "vertebral anomalies"; and most of them could be designated as "mixed" lesions. "Mixed" is an undesirable word, however, and it seems better to adhere to descriptive anatomical or physiological terms.

It is correct to speak of a person with slouching attitude, drooped shoulders and hollow or twisted back as an illustration of faulty posture. This is the anatomical conception. Equally correct in many instances is the term "musculo-ligamentous relaxation" of the back, which lays emphasis on strengths and stretchings of physiological supports of the spine.

One hundred back cases showed the following facts:	<i>Hospital Diagnoses</i>		14 cases	had to be diagnosed from clinical appearances without x-rays.
	Thirty-three Hypertrophic Arthritis of the Spine	19 x-rays	19 cases	had x-rays taken sometime during their course of hospital visits. These showed the following results:
			6 were negative for hypertrophic changes.	
			13 were positive for hypertrophic changes.	
			5 showed vertebral variations.	
			1	showed metastatic new growth of vertebrae.
			1	showed beginning tuberculosis of spine.
			1	showed a probable fracture of a vertebra.
			8 cases	were associated with traumata at onset of symptoms.
			8 cases	were considered back strains also, at some time during their course. No diagnosis of infectious arthritis was made, although numerous foci were present. Forty-nine years was the average age of these 33 patients.
		21 cases	were diagnosed from clinical histories, without x-rays.	
Thirty-four Infectious Arthritis of the Spine	13 x-rays	18 cases	had x-rays taken which showed the following results:	
		6 showed positive hypertrophic bony changes.		
		3 showed vertebral variations.		
		3 showed obscure bony lesions.		
		4 cases	were considered to represent back strains also, at some time during their course.	
		2 cases	were associated with traumata at onset of symptoms. Thirty-three years was the average age of these 34 patients.	
Thirty-three Back Strains	9 x-rays	24 cases	were diagnosed from clinical histories without x-rays.	
		9 cases	had x-rays taken which showed the following results:	
		1 showed definite hypertrophic bony changes.		
		6 showed vertebral variations.		
		1	suggested spinal tuberculosis.	
		1	suggested a fracture of a vertebra.	
		9 cases	were associated with definite traumata at onset.	
		9 cases	had foci of infection which justified a diagnosis of infectious arthritis. Thirty-three years was the average age.	

If, in turn, causes of musculo-ligamentous relaxations are searched for in the blood which supplies back tissues, then peculiarities may be spoken of in terms of vascular variations. In some instances it may be possible to go further, and to designate more remote causes for harmful vascular combinations or peculiarities. Perhaps some abnormality of the gastro-enteric tract has permitted entrance into circulation of unusual substances or unusual quantities of normal vascular constituents which influence musculo-ligamentous back tissues. Or, possibly, kidneys have failed to remove such circulating substances, allowing them to accumulate and produce their effects.

Musculo-ligamentous tissues in other instances are influenced apparently through the blood by parasitic bacteria or their circulating toxins, attention being called to the infectious nature of the process or to the location of the remote focus. Many organs and symptom-complexes may be loosely connected, more or less remotely, thus with the back through the vascular system and reflex nervous mechanisms.

Mention should be made in passing of the clinical grouping of cancer, cachexia and back

pain; other forms of anemia, with rheumatic aches and back weaknesses; specific complaints like nephrolithiasis or constipation and back symptoms; pregnancies, irregularities of menstruation, retroflexions of uteri and other pelvic disorders. Neurologists look upon certain instances of back trouble as due to instability or unusual responsiveness of nervous tissues in psychoneuroses.

The writer would suggest the use, therefore, of as broad comprehensive terms as possible in designating back troubles, now that so many clinical terms have developed. And it is important to realize that because one name is right as far as it goes, another name for the same condition is not necessarily wrong.

All usual aims would be served, if, in the hundred instances which have been cited, a simple classification of "musculo-ligamentous back troubles" were adopted; and greater precision obtained, when desired, by additional clauses. For example, "relaxed" or "irritative" musculo-ligamentous back lesions; or "relaxed musculo-ligamentous back trouble associated with constipation and marked postural defect"; or "irritative musculo-ligamentous

back trouble with vertebral variation, hypertrophic bony changes and nephrolithiasis"; or "relaxed musculo-ligamentous back changes with simple, mild debility."

*Limitations of Clinical Examinations*—Examinations sometimes are called thorough because they represent a great amount of labor, and because they are so in comparison with ones made in the past. Yet some of our so-called thorough examinations are inadequate for accurate testing of many conditions, as, for example, changing strengths of sacro-iliac ligaments and slight displacements of sacro-iliac joints.

It would be convenient if strengths of sacro-iliac ligaments could be measured directly, in order that comparisons might be made between different joints, or in the same joint from time to time. Much clearer ideas would become possible if irregularities of sacro-iliac joint surfaces, together with variations in their sizes and shapes, could be estimated.

With these data available, it might become easier to judge how serious any given sacro-iliac strain was apt to be from degrees of ligamentous weakness shown, and the likelihood of slipping, as indicated by surface irregularities and outlines of joints; for some joints require greater stretchings of ligaments than others to allow unlocking of opposed elevations and depressions on their slightly uneven surfaces.

It would add greatly to precision, also, if vascular variations could be measured from time to time that are causes of ligamentous changes from time to time; but, unfortunately, there are no available clinical methods suitable for routine use in determining amounts of all the numerous circulating vascular constituents; nor for identifying circulating bacterial toxins which are assumed to act on the joints.

Our ideas on these matters now have to be obtained indirectly with very considerable inconvenience and effort. And, undoubtedly, it is owing to these circumstances that sacro-iliac displacements are still topics for discussion; and that relationships between lesions of internal organs and backs, as well as relationships between mild debilities without demonstrable pathological lesions of internal organs and backs, remain in dispute. Many doctors cannot, or will not, take time and trouble to puzzle out sacro-iliac peculiarities from data at hand; and they are the ones who are the disbelievers.

It is not possible to go into details at much length here concerning the evidence for mild debilities being causes of transient weaknesses of back, muscles and ligaments. Often the only clues consist of a few ordinary complaints and physical signs, namely, loss of appetite, recent slight losses in weight, nervous fatigue or worry and mental irritability, slight muscular weaknesses and relaxations, and slight secondary anemias.

Strictly scientific physicians state that it is dangerous to build the science of medicine and medical progress on such flimsy clinical foundations as these; and they state the truth. Nevertheless, patients, who are sick now, often can be very considerably benefited if their physicians will only attempt to understand how nervous fatigue can start a train of symptoms. If nervous fatigue is maintained long enough it can upset digestive and excretory functions temporarily, cause transient accumulations of waste products or other substances in circulation, produce mild anemias and temporary musculo-ligamentous relaxations, and go so far as to induce backaches. Such physicians then can have the satisfaction of relieving many of their debilitated patients quickly by prescriptions of rest, diet regulations and tonic-eliminative drugs, the latter given in accordance with well-established physiological and pharmacological principles. And it does not seem that these successful medical practices will seriously retard medical progress in the future.

For those who do not yet understand sacro-iliac joint slippings, or who disbelieve in them, the following explanations are intended.

Figure 1 shows photographs of a number of anatomical specimens; and, as the pictures were taken under the same conditions by the writer, all being made with the camera at the same distance from the objects, the different sizes, shapes, and surface irregularities of sacro-iliac joints are strictly comparable. Outlines of articulating surfaces have been made clearer by dotted lines; but original shrivelled cartilaginous joint surfaces can be seen still with cartilages in their actual positions. Obviously, different degrees of resistance in slipping of joints would be offered by these various forms and surfaces.

Confusion that arises about displacements comes mainly from the fact that no laxity of ligaments can ever be demonstrated in the majority of instances; consequently, casual observers declare slippings rarely take place. Their ideas only are a little careless and rough, for they imagine too gross and readily recognized lesions.

What actually takes place probably is as follows: Some patients engaged in lifting feel something give out suddenly in lower parts of their backs, and immediately, without thinking, they relieve the strains upon their backs.

Strains are severe enough to tax ligaments nearly to limits of their normal inelastic strengths, and finally these limits are exceeded for the weakest ligaments. The latter really stretch an extremely slight amount before they rupture; and the moment they begin to lengthen, a tendency of joint surfaces to slip increases until actual displacements occur. Such dislocations are extremely minute, however, as a rule, because strains on backs are instantaneously relieved. The weakened sacro-iliac ligaments are able to contract again and continue to hold

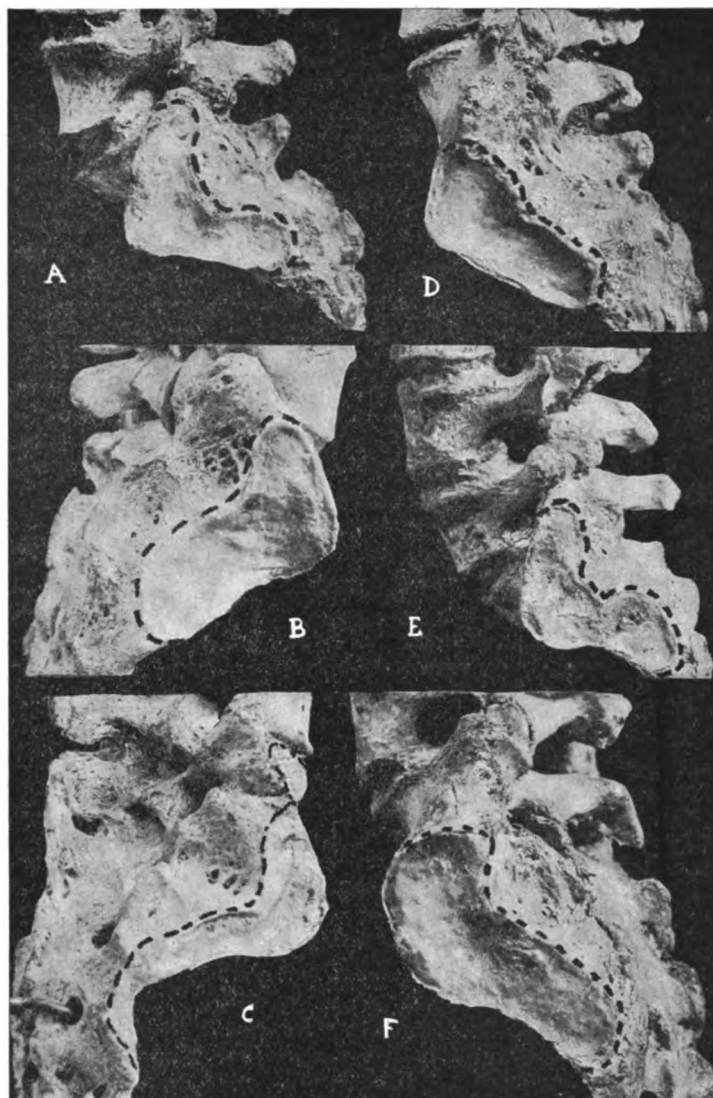


FIG. 1.

joint surfaces immovably in their new relationships. Further displacements of such joints, which have slipped, are possible only by repeated new strains of sufficient severity to overbalance again the limits of ligamentous inelasticity. Ligaments, although weakened, are still very strong, so there are no outward changes appreciable after minor dislocations.

Extremely heavy lifting or sudden twistings are necessary to produce displacements of sacro-iliac joints in robust, healthy men; but if an individual happens to remain quiet, and his back muscles and ligaments weaken steadily through vascular defects from debility or auto-intoxications, then only a moderate or possibly a slight mechanical strain is required to produce displacements.

Weakenings of ligaments from vascular causes may go so far not infrequently that back symptoms develop without appreciable traumata, simply from strains sustained in supporting the weight of the body. Severities of back injuries

therefore, are not very satisfactory indicators alone of the probable courses which resultant back troubles will take. Always it is necessary to take into consideration, as far as blood tests and general examination permit, the quality of circulating blood and its defects.

These illustrations serve to show how attempts have to be made to circumvent limitations of clinical methods, and how that failures in understanding can be traced sometimes to limitations of human patience and perseverance. Further considerations of musculo-ligamentous peculiarities have to be deferred until they are mentioned in the section on musculo-ligamentous back troubles.

#### (B) PRACTICAL RESULTS OF HAVING CORRECT THEORETICAL CONCEPTIONS.

Orthopedic belts, braces, jackets and exercises, then, will not be applied indiscriminately to every case of vertebral anomaly or postural variation. It will be realized that new back strains



may be brought on by therapeutic meddlings when physiological balances between bones and their musculo-ligamentous supports already are in favorable states of equilibrium; or at any rate, that treatments are unnecessary under these conditions.

Operations on long transverse processes of fifth lumbar vertebrae will not be attempted without recalling that surgery does not remove underlying causes for ligamentous weaknesses. Such vertebral processes have no significance as long as ligamentous stays do not stretch and allow them to impinge on adjoining bones; therefore, there will be hesitation in still further weakening flexible supports of bones through additional injuries unavoidably sustained in surgical measures.

Vascular peculiarities responsible for temporary weakenings of muscles and ligaments will not be neglected in treatment, as so often happens now when mechanical features absorb nearly all attention.

Patients with hypertrophic arthritis of the spine will not be given discouraging, hopeless diagnoses because extensive bony overgrowths are shown in x-rays. They will be examined and treated rationally to reduce future unfavorable influences acting; and possibilities of permanent subsidence of severe painful symptoms will be recognized, even with well-advanced hypertrophic changes, when some important cause for the latter can be removed.

Generally, there will be better balanced ideas regarding physiologic alternations of exercise and protection; dangers of too much care or too great neglect; comparative merits of different forms of apparatus, and numerous small details which can be discussed better in the analysis of the series of hospital cases.

Briefly summarized, the practical result of securing correct theoretical conceptions constitutes one of the first important steps towards gaining efficiency in treatments that rightly can be expected now. Then perhaps there will cease to be so much confounding of wealth of medical data, which is great, with skill in directing treatments which still is decidedly poor in very many instances. We have very little reason now to pride ourselves on our ability to care for back troubles properly, when there are so poor general agreements as to a practical working hypothesis, and when so many inefficient one-sided methods of limited scope still are used so widely without adequate general conceptions.

#### (C) SPECIAL MUSCULO-LIGAMENTOUS PECULIARITIES AND TESTS. OTHER LESIONS OF THE SPINE.

All simple postural strains, traumatic strains, torn ligaments, myositis, toxic or mixed infectious back lesions, synovitis, so-called typhoid spines, hypertrophic arthritis and spinal bony anomalies will be grouped in a single compre-

hensive class of musculo-ligamentous back troubles. This is advisable because differentiations are so difficult or impossible often; also because several of the list commonly occur simultaneously; and because musculo-ligamentous features always are very prominent in all, while other special peculiarities possess more limited significances.

However, there remain to be mentioned spinal fractures and dislocations, tuberculosis of the spine, vertebral neoplasms, spinal cord tumors and nervous disorders which have such well-defined natures that their important specific sides overshadow other features, including musculo-ligamentous ones.

It seems appropriate, accordingly, to discuss certain characteristics of ligaments and muscles and afterwards the other mentioned topics in turn.

*Special Ligamentous Peculiarities*—Use and disuse produce opposite effects on tissues, including muscles, ligaments and bones. With use muscles swell in size and increase in strength, bones exhibit rearrangements of their internal structures to compensate for increased strains, and ligaments hypertrophy to meet their increased physiologic requirements. With disuse muscles shrink and become less strong, bones show rarefying processes in their structures, and ligaments slowly weaken.

Ligamentous changes are most difficult to prove, especially small, slow variations from time to time, as has been pointed out with regard to sacro-iliac joints. But there are no uncertainties about great changes, namely, the ligamentous stretchings and weaknesses which occur in serious joint destructions like tabetic knee joints. Lesser changes presumably take place in milder troubles in similar ways although recognized with difficulty.

Ruptures of ligaments leave them with frayed, ragged ends. In more gradual changes entire masses of ligamentous fibers elongate, or fibers slip among themselves dislocating previous relationships; but it is impossible practically to show what really does take place in any individual case.

The chemical reactions of cloth fibers are useful in assisting comprehensions of the changes taking place in ligamentous strengths. Different pieces of the same textile fabric which have been treated in different ways with chemicals or dye-stuffs show variations in strengths subsequently as a result of particular kinds of treatments they receive. Possibly all look the same after chemical processes as before, yet on testing them some are found to remain strong while others are "rotted" more or less.

It is of interest that connective tissues, including ligaments, outside of the body react in characteristic ways to acids and alkalies, swelling and shrinking according to chemical reactions of the medium in which they are immersed. On a commercial scale these connective tissue peculi-

arities are witnessed in "plumping" processes associated with preparation of leather.

From these comparisons, it is not difficult to imagine how living ligamentous tissues can be influenced in chemical or physical ways by variable compositions of blood and lymph to which they are subjected. They do not change much in outward appearances, but presumably some transitory vascular conditions are more favorable than others for their strength. Some unfavorable blood conditions, for example, those of auto-intoxications and debilities, apparently produce transitory weaknesses analogous to "rottings" of textile fibers; but with the difference that strengths are slowly regained again after objectionable vascular defects pass away.

Finally, as signs of diminishing vitality, can be observed beginnings of uratic deposits or calcifications in and upon ligaments, at their points of insertions where mechanical strains and injuries have been greatest.

*Clinical Tests for Muscles and Ligaments*—The practical dilemma in which we find ourselves at present consists of our inability to measure accurately the principal functions of muscles and ligaments, namely, their strengths, by any routine clinical method. Nor can we measure clinically now those unknown vascular peculiarities in patients which are producing changes of musculo-ligamentous strengths from time to time. Even our estimates of the severity of traumata experienced are comparatively crude. How then can it be expected that physiologic efficiencies of backs can be judged with great precision; that exact states of physiologic balance, from time to time, in different individuals, between bony peculiarities of their spines and their flexible spinal supports, can be determined when strengths of the latter are so imperfectly known?

The answer is that at present accurate ideas are not possible, and that this state of affairs must remain until new clinical tests are devised for measuring muscular and ligamentous strengths; and until new clinical blood tests also are discovered by which identifications and easy measurements of innumerable quantitative vascular peculiarities become possible. Meanwhile, by indirect means, we must continue to gather clues of musculo-ligamentous peculiarities in whatever ways now are available.

Sizes of muscles offer an opportunity to gauge roughly their extremes of weakness and strength. Peculiarities of postures, when not due to developmental variations, draw attention to possibilities of musculo-ligamentous stretchings of the past, from which individual histories of such patients' past troubles indicate whether existing postures mean very little or very much. The occupation, and history of injuries, indicate roughly how much any particular person's ligaments and muscles have had to resist. Distribution of back pains roughly suggests what particular group of muscles or ligaments has

been strained. Tenderness upon pressure is an extremely important symptom in the localization of back lesions; and there may be diffuse tenderness throughout irritated muscle masses at times, or sharply localized tenderness at other times over ligaments and ligamentous attachments.

X-rays reveal spinal anomalies, but alone they furnish no clues whatever as to whether such bony variations are to be considered factors of weakness or strength or how they influence ligamentous variations. It is from histories of these patients, together with evidences of local trouble, as revealed by local sensitiveness to pressure, that x-rays become valuable in diagnosis of musculo-ligamentous lesions.

Further information of a certain kind regarding back muscles can be gained from local spasm of muscles as they respond to irritations; while limitations in normal ranges of back motions are indicative of back defects of some sort. Simple blood tests reveal anemias and possible relationships with back weaknesses. From this vascular point of view, extending to various organs of the body, are loosely traced probable or improbable relationships.

The list of indirect clinical tests for backs thus can be enlarged indefinitely, each adding its bit to the evidence relating to musculo-ligamentous strengths and their variabilities from time to time. But each is likely to be very limited in its scope, and, therefore, is never to be given much weight except in a very small proportion of all cases.

Fairly good estimates of strengths of backs can be secured from testing individuals' back lifting powers; yet, of course, weights lifted show as much regarding the integrity of the bony spine as they do concerning its flexible stays. Some ideas are obtained concerning the efficiencies of both. The writer makes use of a rough weight lifting test, which can be made easily and quickly with a self-registering dynamometer, that occasionally indicates interesting differences. Patients simply are directed to lift as hard as possible on the dynamometer, and are cautioned to desist as soon as they begin to feel uncomfortable pain or weakness. This gives an idea of the strength of muscles, ligaments, and bones taken all together as a single unit which can be recorded in pounds. Two illustrative cases will indicate what differences may be found.

A stevedore came with complaint of pain situated low in the back, of gradual onset, without trauma. There was more than the average lumbar antero-posterior curve. Pains were moderate and diffused in sacral and lower lumbar regions. Localized tenderness was absent. Back motions were cautiously made and slightly restricted. Back muscles stood out as prominent, firm ridges on each side of the deep median furrow of the back.

The second patient also was a middle-aged man with very prominent lumbar muscles, with restricted back motions, and a history of a fall a year previously.

When the first one lifted on the dynamometer it registered three hundred pounds, while the second patient could pull only ten pounds before pain and weakness were felt uncomfortably. An x-ray of the second case showed an old impacted fracture of the first lumbar vertebra. Further examinations revealed in the first man the fact that all muscles were prominent and well developed, and that subcutaneous fat was very scanty. He had a mild musculo-ligamentous back strain, but also had development of an athlete with hard, prominent, yet not contracted, muscles of the back. The second man was trying unconsciously to protect his injured spine by reflex muscle spasm.

Electrical tests have been devised for strained back muscles, and although not commonly used, they do help in favorable instances to show undoubted functional muscular differences.

An apparatus which the writer uses consists of a series of condensers, plates of mica coated on both sides with tin foil and all embedded conveniently in paraffin, so that an electric current can be passed into the system according to the need, and from one to nineteen of the various sized plates utilized. When the current enters the connected tin foil discs on one side of the mica plates there is induced a momentary current in the independent system of discs insulated by the mica on the opposite sides of the plates. This quantity of electricity, which is momentarily induced by making and breaking of the primary electrical circuit, is led away to muscles where it may cause visible muscular contractions around a stimulating electrode placed on any selected spot, provided enough units have been thrown into the series to furnish sufficient electricity.

The advantages of the apparatus are that it provides variable definite quantities of electricity measured in a reliable, easily regulated manner. Extremely minute doses (0.01 microfarad) are tried first experimentally, and increased in regular way, until muscular contractions just begin to occur in response to stimuli. Smallest quantities required to cause visible contractions are used as end points in readings and these amounts are recorded.

With an electrical myometer of this sort, striking differences are found at times between relaxed erector spinae muscles of the two sides in the lumbar region, that correspond with unilateral distributions of pain. Increased sensitiveness to electrical stimuli is found in some instances in gluteal muscles as well as lumbar regions, showing that we must not narrow down our conception of back strain too closely. When spinal muscles are contracted reflexly around some irritated spinal segment larger doses of electricity are required to obtain direct contrac-

tions in these tense muscles than in relaxed ones. Nervous, apprehensive patients respond with reflex muscular contractions occasionally as soon as the first sub-minimal dose is tried, then as the amount is increased there appears the usual small visible contraction around the stimulating electrode, followed quickly by the second reflex contraction of the whole muscle. When the electrode is brought into the neighborhood of an irritated sacro-iliac joint there may be a feeling of nausea produced, with no muscular contraction.

The apparatus is used by taking repeated readings because, similarly as in estimating the presence or absence of knee reflexes, it is necessary that slight variations in positions are tried before correct estimates are secured.

There are many limitations to the application of the myometer, and many patients show no differences which can be depended on, nevertheless, it is useful in directing attention away from bony peculiarities that have to be managed somehow just as they exist, to musculo-ligamentous changes that can be rectified and which should be treated by every reasonable available means as quickly as possible in order to prevent development of chronic weaknesses.

In concluding the discussion of musculo-ligamentous back troubles mention has to be made to referred back pains. Some physicians claim back pains represent referred nervous phenomena originating from demonstrable lesions of internal organs. Others are equally certain that such backaches can be traced to definite abdominal or pelvic lesions, perhaps, but that conditions essentially represent harmful variations of the blood which produce musculo-ligamentous relaxations or irritations in the back.

Neither theory can ever be proved or disproved conclusively because both possibilities always simultaneously exist, neither one can be excluded in any given instance, both are plausible, and perhaps both are correct at times; but there the matter must rest at present. So let us admit our limitations instead of unwisely engaging in useless controversies.

*Fractures and fracture-dislocations of vertebrae.* Fractures and fracture-dislocations of the spine, of special interest in connection with back troubles here under consideration, are not obvious fractures accompanied by grave spinal cord lesions, but obscure impactions of vertebral bodies, or fractures of transverse processes of vertebrae, without spinal cord injuries and without usual signs of fractures. These can be diagnosed positively only by means of x-rays, so that many of them have been diagnosed in the past as chronic severe cases of musculo-ligamentous back injuries.

The topic of fractures and fracture-dislocations will not be entered into in detail; but one instructive unusual case that was examined by the writer for the Massachusetts Industrial Accident Board will be cited and x-rays given to il-

lustrate some of the possibilities which have to be thought of.

A fifty-three-year-old man fell 18 feet from a staging and landed on his buttocks in a sitting posture with his back bent forward. He went home almost immediately after the accident on an electric car, and within a few days an x-ray was taken which showed no definite bony spinal lesion. He was given a combination steel back brace and abdominal-pelvic belt and after one year's time he was examined by the writer. At this later time the back brace was being worn, and there was a very slight prominence at the fourth lumbar vertebral spinous process. Back motions were limited greatly. He could not bring a hod of coal upstairs on account of the feeling of back weakness. Pains in the gluteal region, of which he had constantly complained, were subsiding but were still quite severe. No pains were present in the legs; knee-jerks were equal and very lively; tenderness was localized and severe at the lumbo-sacral juncture. Additional x-rays were thought advisable and were taken by Dr. Arial George of Boston. They revealed a fracture-dislocation of the fifth lumbar vertebra on the sacrum. In the lateral view, which is given below, and which was taken through the pelvic bones, can be seen a surprising degree of forward dislocation of the fifth lumbar vertebra which could not be identified in any way from antero-posterior plates usually taken.

*Tuberculosis of the Spine.* Typical tubercular lesions of the spine with extensive destruc-

tions of vertebrae and with visible bony knuckles or deformities are omitted from consideration, because they are well understood. There are some cases of spinal tuberculosis in adults, however, which remain latent for long periods before appreciable x-ray changes are observed in bones, or before bony deformities become evident.

These patients inevitably receive diagnoses of infectious arthritis, back strain, or hypertrophic arthritis until x-rays show true natures of the lesions. It is not uncommon to have some tubercular patients come for treatment with histories of gradually developing back pains, with or without injuries, and to have back muscles only slightly rigid with motions limited in only moderate degrees.

In these patients painful symptoms not infrequently subside slowly and completely with protection; and then the patients disappear for six months or a year or more. They have tubercular infections apparently of such low grades of virulence that alternate periods of back pain and freedom from pain may occur for years before x-rays finally demonstrate definite and often quite extensive tubercular bone disease without deformity.

One practical lesson from these perfectly reliable clinical facts is, that all suspected sacroiliac displacements should have the precaution taken of having x-rays made always before forcible manipulations are attempted.

*Other causes for back symptoms.* Neoplasms of vertebrae have to be mentioned which are

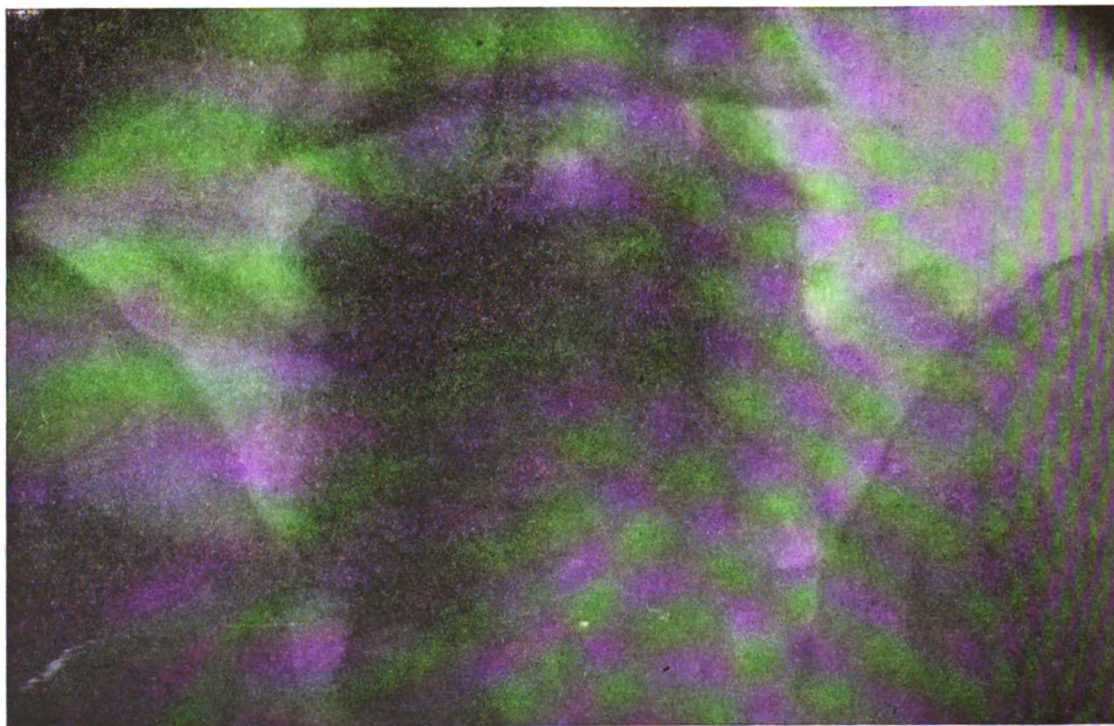


FIG. 2.—Fracture-dislocation of fifth lumbar vertebra on sacrum. (Dorso-ventral view.)



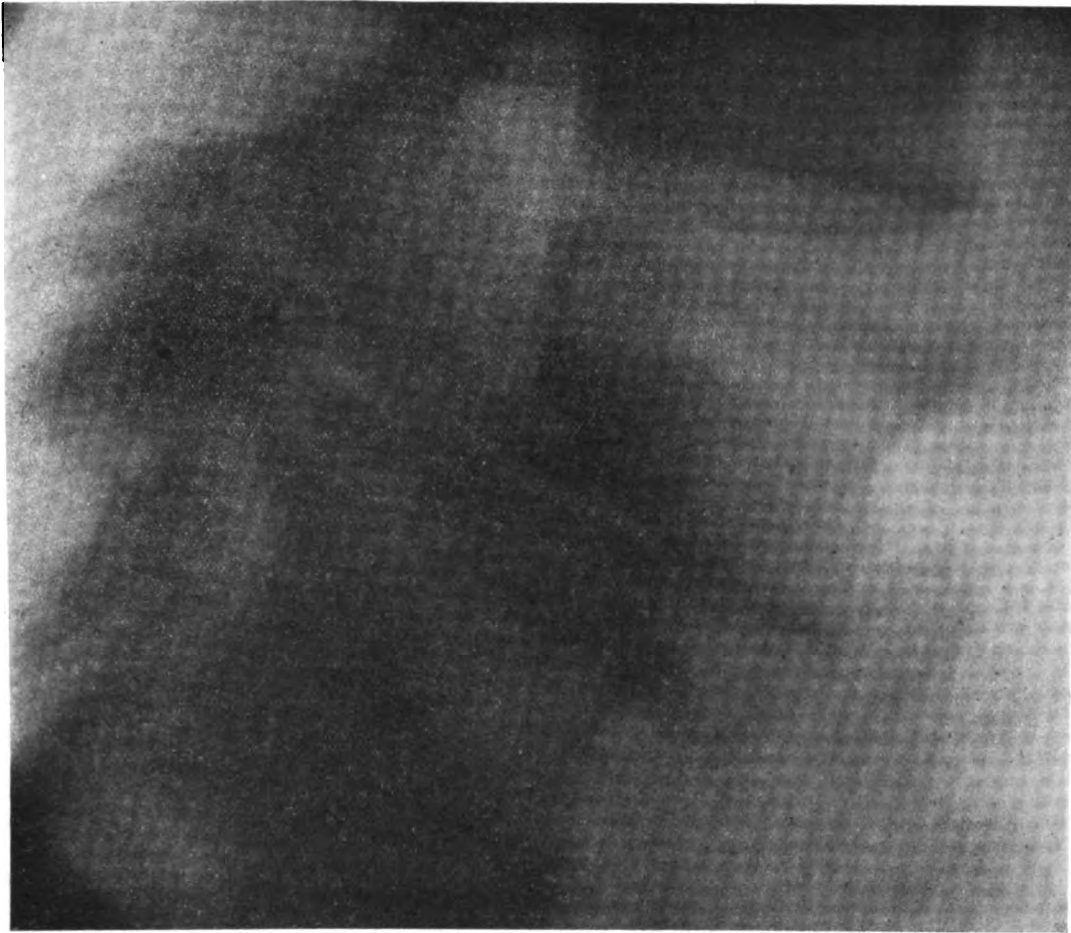


FIG. 3.—Fracture-dislocation of the fifth lumbar vertebra on the sacrum.  
(Lateral view taken through the pelvis.)

secondary to new growths in the body elsewhere; and histories of the latter help to fix suspicion on the probable character of back pains in these patients, yet x-rays are needed to make diagnoses positively.

Primary bony new growths, sarcomata of the spine, are encountered not very infrequently, and like tubercular lesions, they await x-ray differentiations for positive proof usually of their existence. Commonly, they are diagnosed sacro-iliac strains, infectious arthritis, or hypertrophic arthritic changes until detectable bony changes settle their characters.

Spinal cord tumors, particularly new growths of coverings of caudae equinae, produce low back symptoms. All cases with bilateral pains that extend into both legs should be carefully investigated. One such patient which the writer saw in the practice of another physician died very suddenly without any very obvious cause for death and the autopsy showed a glioma of the cauda equina. The patient presented the usual clinical appearance of a severe sacro-iliac lesion aside from bilateral leg pains. There have been instances of relief from operations with removal of these tumors in those cases in which diagnoses have been made.

Syringomyelia is associated with irregular back pains that are mistaken occasionally for musculo-ligamentous back strains, but as soon as this trouble has developed enough to show its characteristic features then differential diagnoses become possible.

Finally, must be mentioned, for completeness, rare cases of abdominal aneurysms which erode the spine and cause severe back symptoms. Localized arteriosclerotic changes of arteries of spinal cord and spinal ganglia also are said to be causes of very severe back pains; and it seems more reasonable to the writer to explain some back symptoms in this manner than to imagine nerves are pinched in vertebral foramina. Hemorrhages into cord coverings and caudal neuritis have to be included in the list of causes of low back pains.

#### (D) AN ANALYSIS OF A SERIES OF ONE HUNDRED HOSPITAL BACK CASES.

Hospital records of thirty-three hypertrophic arthritis, thirty-four infectious arthritis, and thirty-three back strain cases, mentioned already while discussing limitations of diagnoses, will be reported further here in a single group.

Twenty-nine of the hundred cases came either once or twice, mainly for diagnoses or x-rays.

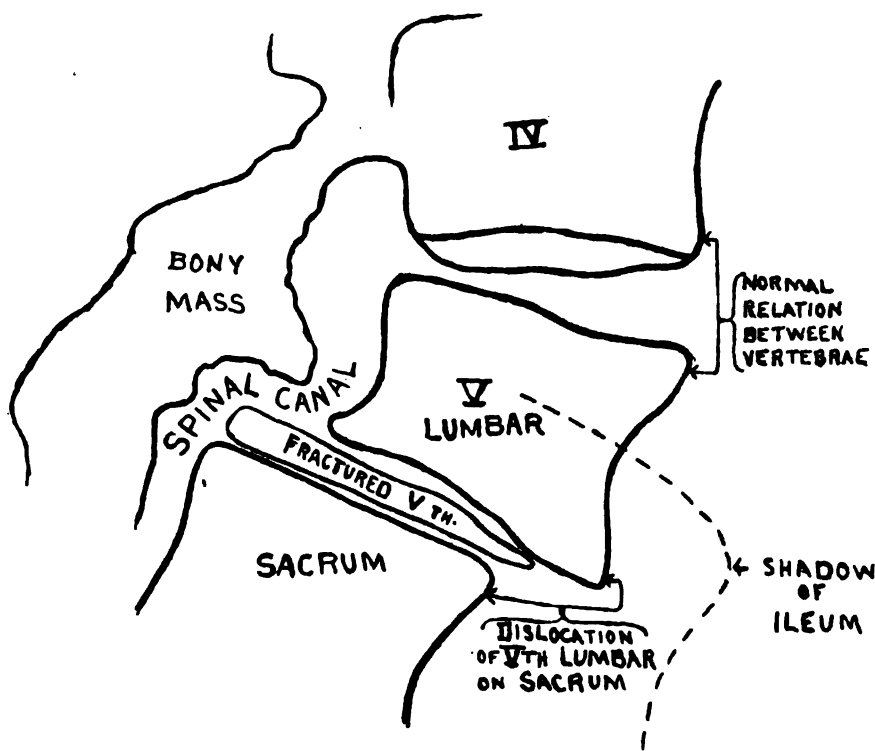


FIG. 4.—Tracing of bones in Fig. 3.

Sixty-four of the hundred cases completed their treatments and disappeared in a year or less, coming to the hospital from two to twenty-four times, averaging six or seven visits before they were lost to observation.

Seven of the hundred cases required one year or more of treatment, owing to recurrences of back symptoms. The longest time was two years and two months, and even then relief was not obtained.

Average durations of treatments among the majority of cases of back strains and infectious arthritis were six or seven weeks. In the hypertrophic group of older patients, ten to eleven weeks of treatment were required, on the average, by most of them.

Among these hundred patients twenty plaster jackets were put on; twenty-four webbing belts fitted; adhesive strappings were applied to forty-four patients; leather jackets or steel braces given to seven persons; medico-mechanical exercises prescribed in ten instances; hydrotherapeutic treatments taken by eighteen patients; and twenty-nine patients received drugs of various kinds. Seventy-two of the hundred were examined in more than one department of the hospital. Ten had their teeth examined by x-rays for infectious foci, and seven of the ten showed negative results.

Plaster jackets were put on within a few days after patients first made their appearances, in fifteen of twenty cases. The remaining five were deferred until moderately severe symptoms failed to respond to adhesive strappings.

The usual indications for plaster casts were x-ray appearances that looked suspiciously like early tubercular spinal lesions; or very acute pains with marked muscular rigidity.

Duration of wearing jackets varied from nine days to ten months, depending upon different circumstances.

Splitting of jackets often occurred after two or three weeks' wear, then patients continued to wear them split for variable lengths of times, according to individual requirements, while belts were being made.

*Results of wearing of jackets.* Two patients experienced extreme relief immediately. The majority of patients were relieved more slowly. One patient claimed that no relief was obtained, one said the jacket made his pains worse, and one never returned after the first visit at which the jacket was immediately put on. One, which subsequently proved to be malignant disease of the sacrum, was relieved greatly for nine weeks previous to his disappearance from hospital observation.

*Results of adhesive strappings.* They caused great relief promptly in one to seven days among six patients of the forty-four which were strapped. The majority were improved more slowly. No relief was obtained in eight cases, and one patient stated that strappings increased back pains. The most satisfactory result occurred with complete relief in twelve days from two strappings in an acute, moderately severe, type of back strain. Webbing belts very commonly were substituted for strappings, if the

latter failed to relieve pains completely after a few weeks.

*Results of webbing belts.* They were ordered after adhesive straps, or for patients whose severer symptoms had been partly relieved by plaster jackets. They were worn very variable lengths of times, patients commonly ceasing to return to the hospital as soon as they received their belts, while symptoms were subsiding.

Leather jackets and steel braces were prescribed seven times for chronic troubles and faulty postures. They duplicated in convenient forms many of the effective features of plaster casts. They usually are worn for considerable periods.

Hydrotherapeutic baths, given to eighteen patients, were prescribed immediately in seven instances, one to nine baths in twenty-five days or less. Usually when they were combined with tonic-eliminative drugs in early cases there followed prompt relief of backaches except in one case of associated kidney stone. Ten of eighteen cases were prescribed after plaster casts had partially relieved the pains, or after Zander exercises had been tried, or webbing belts were producing only fair progress. Four or five bath treatments generally were taken on the average; but one patient received thirty-eight in one year and five months.

*Results of hydrotherapeutic baths.* Prompt relief followed in several cases, and all patients were more or less improved for a while, at least, also no unpleasant effects were observed.

*Medico-mechanical exercises* were given almost always late in courses of treatments, after belts and jackets had partly relieved pains at the expense of increasing stiffness. From one to twenty-seven treatments were received in times ranging down from three months as the maximum. The majority of the ten patients took only three or four on the average. No bad results were reported and usually patients were partially limbered up again.

*Medicines* were given in medical departments of the hospital to eight patients for special complaints. Aspirin or sodium salicylate was prescribed to eight other patients. Mild tonic-eliminative drug combinations were given in the orthopedic department to twenty-one patients in order to rectify obscure vascular conditions, and thus accelerate restorations of musculo-ligamentous strengths.

*Interpretations of Statistics; Criticisms; General Conclusions*—Statistics presented by these hundred cases indicate that enough was done for them, and that a sufficiently varied set of therapeutic measures was employed. Fair degrees of skill, at least, are shown by absence of poor results in most cases; and exact degrees of skill never can be estimated closely from statistical data.

Matters of very vital importance from standpoints of patients' welfares at the present time, however, are these variable degrees of dexterity

which are shown in prescribing therapeutic agents and courses.

Many learned scientific medical men allow their interest to cease to a great extent when transition lines between medical science and the art of medical practice are reached. On the other hand, unlearned practitioners of various sorts often study closely their patients' comforts. By adopting certain reliable methods originated by careful scientific physicians, non-scientific men may acquire skill greater sometimes in treating patients than doctors of much greater scientific training, who neglect this final step in successful medical care. For not infrequently patients state that, after trying all kinds, they have received most benefit from certain doctors whose reputations are not the best because of the irrational, fantastic theories they hold. Yet, undoubtedly, certain patients really are relieved by unconsciously skillful practices of these questionable individuals who do not understand why they succeed and who offer entirely wrong explanations for benefits received.

This state of affairs should not exist to the extent it does; and there should be as much care taken with patients' welfares by the best mentally equipped medical men as there is great interest shown in medical science, even though art in practice does consist of understanding and applying innumerable, comparatively uninteresting details of familiar methods and remedies.

Complete, perfect, theoretical conceptions of back troubles avail little practically, when there is not adequate knowledge of such exact details, as, for example, the time to take off a plaster jacket that has been put on, or if adhesive plasters cannot be applied in a way to reinforce weakened back muscles and ligaments. The weakest link in the chain of procedures determines the strength of the whole system of links.

It is an unfortunate fact that a considerable percentage of practitioners still do not know much about these very simple matters. There are thousands of belts and braces hung loosely on patients now, which are not doing their intended work. Medicines are prescribed still in routine manner very often with greater regard to over-dosage than to securing their desired physiologic effects. Strappings are applied many times without much thought of anatomy, or muscular arrangements, nor of limitations of strengths of straps.

The writer believes that plaster jackets are left on usually too long in cases of musculo-ligamentous strains, and that stiffness from long immobilization retards recoveries very frequently. Four or five days is a sufficient time to give strained or irritated tissues a chance to be relieved appreciably. Then, jackets should be split, and afterwards reapplied, if necessary, a part or whole of the time. Splitting also allows applications of firm adhesive strappings under them, or combinations with massage and



hydrotherapy. Wearings of jackets resemble wearings of plaster casts after fractures; both may be extremely desirable, yet both are liable to result in extremely undesirable stiffness if not discontinued soon enough.

Too scanty local protection, on the other hand, is observed rather commonly among industrial accident cases. Insurance companies find that drawbacks of too much protection in the majority of cases are greater than risks from minimum amounts of medical care. They encourage injured workmen to use their backs as soon and as much as possible. And some of the latter have delayed recoveries from too much activity when backs are weak.

Combinations of adhesive strappings with tonic-eliminative drugs give very satisfactory results in cases of average severity and of average duration. They are better than either one alone. Drugs and diet regulations, in combination with plaster casts, likewise are beneficial; and, in fact, very few patients' conditions are so purely mechanical that they will not be improved more or less by measures that improve qualities of circulating blood. Yet, very commonly patients are treated as though they are only defective mechanical machines.

Manipulations of sacro-iliac joints happen not to have been made in any of this series of cases; nevertheless, manipulations occasionally are extremely beneficial. They sometimes terminate in a few minutes pains that have lasted for months, and some patients are so greatly relieved after moderately forcible manoeuvres that they beg to have them repeated. Care has to be exercised, however, with forcible manipulations not to aggravate latent tuberculosis which is simulating sacro-iliac troubles, or not to increase existing strains of sacro-iliac ligaments, as may readily happen when patients are etherized. Since it is impossible to detect slight slippings of sacro-iliac joints, manipulations have to be made rather blindly, attempting to force joints back into their original position by pressures and pulls in directions opposite from the ones which have produced displacements.

Patients who have felt something "give way" in their backs can be manipulated gently very soon. Those who are not making satisfactory progress at the end of two months also should be gently stretched and pulled without anesthesia. Long-standing, severe cases occasionally obtain prompt relief from the continuous pull of extension weights attached to the leg while patients lie in bed.

All variations in combinations and variations in lengths of administrations of different therapeutic measures cannot be discussed in this paper, although upon them depend shortenings or prolongations in times of recoveries.

Enough has been said, however, to show that unsatisfactory states of affairs now can be traced often to utterly inadequate theoretical conceptions or to inadequate, bungling treatments.

There is a justifiable optimistic view possible from contemplating the very great achievements of medical science recently, yet, in fairness, a balance has to be struck, with some pessimistic consideration of the vastness of our present failures. An opinion is thus reached that progress in care of back cases is being slowly made, and that there are tremendous opportunities for improvements with the facts and tools at hand, depending simply on greater carefulness, thoughtfulness and skill.

In conclusion, the writer wishes to acknowledge his indebtedness to Dr. E. G. Brackett of Boston, for many privileges at the Massachusetts General Hospital; and to Dr. F. D. Donoghue, medical adviser to the Massachusetts Industrial Accident Board, for numerous suggestions on phases of the subject not generally considered.

### LITHIASIS WITH BILATERAL RENAL INVOLVEMENT.\*

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WHEN lithiasis is found to exist with bilateral renal involvement, certain problems of diagnosis, prognosis and treatment arise which merit special consideration. The various conditions in which such involvement is present may be as follows:

1. Bilateral nephrolithiasis, including stone in the ureter on one or both sides.
2. Lithiasis in one kidney and disease in the other.
3. Lithiasis in a solitary kidney.
4. Lithiasis in a fused kidney.

**Bilateral Nephrolithiasis.**—On reviewing the records of the Mayo Clinic from Jan. 1, 1910, to Oct. 1, 1917, it was found that 62 patients had been operated on for bilateral nephrolithiasis. During the same time, 504 patients with unilateral lithiasis were operated on, making a percentage of 12.3 of bilateral lithiasis occurring in the operative cases. It is, however, difficult to determine the exact proportion in which bilateral nephrolithiasis occurs because of the many associated factors. It would be necessary to include, (1) all cases of bilateral nephrolithiasis and ureterolithiasis, which for various reasons were not operated on, (2) cases of ureteral stones on the opposite side previously removed by operation and cystoscopic manipulation, since they are in fact dislodged renal stones, and (3) all stones passed spontaneously from one or both kidneys and ureters.

**General Statistics.**—In the series of 62 patients operated on, there were 40 males and 22 females, which is in keeping with the relative occurrence of sex as noted in cases of unilateral lithiasis. It is of interest that lithiasis should

\* Presented before the New England Branch of the American Urological Association, Boston, November 15, 1917.

occur practically twice as often in the male as in the female. This relative proportion also holds good in other forms of chronic renal infection, and is suggestive of the infectious etiology of the condition. The average age of the patients was forty years, and the average duration of symptoms was nine years. It is unfortunate that the symptoms associated with lithiasis should be allowed to remain without treatment during so long a period. Their long duration is in a large measure responsible for the comparatively poor prognosis and the various complications so frequently seen with bilateral lithiasis.

*Localization of Pain.*—The pain was localized definitely to both sides in only 14 cases, to one side in 26 cases, and in 14 cases to one side recently with a previous history of more or less definite pain on the other side. Renal pain was absent in 8 cases. The large number in which the pain was entirely or predominating on one side (64.51 per cent.) should emphasize the necessity of making a complete roentgenographic exposure of the kidneys and ureters on both sides in every case. In cases in which the pain was absent, attention was called to the possibility of nephrolithiasis by the presence of microscopic pus in the urine. In the majority of instances the kidney causing the most pain, particularly in recent years, was found at operation to be the better of the two. The kidney which in former years had caused most of the pain, with little or no pain recently, was, in the majority of instances largely destroyed, and a nephrectomy was necessary.

*Location of Stones.*—The location of the stones in cases in which both sides were operated on was: pelvis and calices, bilateral, 10; pelvis and calices on one side and cortex on the other, 7; pelvis and calices on one side (nephrectomy on the other), 9. When one side only was operated on the stones were found located as follows: pelvis and calices, 14; cortex, 6. There were 7 nephrectomies and 2 negative explorations. No attempt was made to localize the stones in the cases of pyonephrosis with stones, since the destruction of the kidney-tissue was so great that it was impossible to determine their exact situation. It is evident that in cases of bilateral nephrolithiasis the majority of stones are situated in the pelvis and calices, as in cases of unilateral stones. Literature on the subject would lead us to believe that stones are most commonly situated in the cortex with bilateral lithiasis, but judging from our series, such localization is less frequent. Many cortical stones described as such in the operation records were probably situated originally at the end of the calices.

*Estimation of Renal Function.*—Estimation of the combined renal function may, in a few cases, be of considerable aid to prognosis. Phenolsulphonephthalein is, for all practical purposes, as valuable as any functional test. When the return in two hours is only a trace or persist-

ently very low, the prognosis is necessarily grave, and operation is usually not advisable unless there are urgent indications. We have, however, observed two patients in whom there was a persistent low phenolsulphonephthalein output, 5 and 8 per cent. respectively, several years after operation. When the phenolsulphonephthalein return is moderately low, varying from 20 per cent. to 40 per cent., I have frequently observed that it will later become much higher following operation. This is particularly true in the presence of marked infection relieved by drainage subsequent to lithotomy, and it may be inferred that toxic absorption as well as reflex irritation may be the cause of temporarily reducing the renal activity. A high return, 50 per cent. or more, is of value when clinical symptoms, or the general appearance of the patient, are suggestive of renal insufficiency. Particularly is this true in the presence of marked renal infection with toxic absorption, which frequently causes symptoms simulating advanced renal insufficiency. A high phenolsulphonephthalein return would assure the existence of one good kidney at least. The combined functional test, therefore, is of practical value only with a normal or extremely low return where the clinical appearance is doubtful.

It may be desirable to determine the comparative degree of function remaining in the two kidneys. This is not always possible but frequently may be done, (1) by the size and character of the stone, (2) by cystoscopic inspection, and (3) by a differential functional test.

*Radiographic Data.*—Very large stones, and more particularly large branched stones will, as a rule, cause so much tissue-destruction that nephrectomy will be necessary. Occasionally, however, the amount of secreting-tissue remaining is surprising in spite of the existence of large branched stones. The difficulties in removing such stones entirely, particularly when soft and crumbling, without too much damage to the kidney-tissue, are considerable. Single round stones, even though of large size, may cause comparatively little damage to the kidney-substance, and usually offer a better prognosis. Multiple stones, particularly when of large size and scattered throughout the kidney, usually indicate complete destruction of the kidney.

*Cystoscopic Inspection.*—Such inspection may be sufficient to determine the comparative functional ability. If thick pus is seen exuding occasionally, or only on pressure, the destruction of the kidney may be taken as very evident and ureteral catheterization will be unnecessary. When, however, the urine on one or both sides is clear or only moderately cloudy, a differential functional test may be of some value. As I have previously stated, pyelography may give more accurate data as to the extent of renal destruction than any other method. When the pelvis and calices are seen to be markedly dilated and irregular, it may be inferred that comparatively

little healthy tissue remains. Pyelography should, however, be employed only when other methods fail, and then only when a comparative estimate of renal function is of practical value.

**Differential Functional Test.**—The irritation caused by stone in the kidney will usually interfere greatly with the accuracy of the estimate of renal function. It is difficult to explain the variable degree of reflex inhibition of secretion exerted by renal stone. One kidney containing a stone may have a phenolsulphonephthalein return of but 4 or 5 per cent. in fifteen minutes, while another, with a stone similar in size and position and with the same degree of infection, may have a normal return. As a rule, small stones of recent origin and without marked infection, will cause comparatively little functional disturbance. Low functional return in the presence of stone is usually succeeded by a normal phenolsulphonephthalein output after the stone has been removed. Renal functional tests can give us only an estimate of the functional activity of the kidney at the time of the examination, and not what the kidney is capable of doing under normal conditions. Too much reliance cannot, therefore, be placed on the amount of normal tissue in the kidney, as shown by the phenolsulphonephthalein test. This was well illustrated in one of our recent cases with stone in the left renal pelvis in which the differential phenolsulphonephthalein estimate from the left kidney was 7 per cent. in fifteen minutes. From this it might be inferred that considerable healthy tissue remained and a conservative operation would be indicated. At operation, however, a large abscess was found in one pole, together with several soft areas in other portions, so that a nephrectomy was clearly necessary. In several other instances in which branched stones were present the phenolsulphonephthalein return was surprisingly good, and on surgical exploration the kidney was found to be so markedly diseased in areas that a nephrectomy was obviously indicated. On the other hand, if the phenolsulphonephthalein return is zero or only a trace, it may usually be inferred that the kidney is so largely destroyed that a nephrectomy is indicated. If, however, the phenolsulphonephthalein test is only comparatively low, the functional test is of uncertain value, and unless the other data obtained by physical, cystoscopic or roentgenoscopic examination are of definite value, surgical exploration only will determine whether or not the kidney can be saved.

#### INDICATIONS FOR OPERATION.

After it has been decided that an operation is advisable the question arises: Which of the two kidneys should be operated on first? Rules as follows may be made:

1. In the presence of recent acute pain, repeated and continuous hemorrhage or toxic absorption from advanced renal infection referred to one kidney, that kidney must necessarily be operated on first.

2. If conditions do not necessitate this operation, the kidney with the better function should be operated on first in order to take advantage of the function remaining in the kidney on the other side during the acute stages following operation. This is particularly imperative when the stone is so situated that the drainage from the kidney with the better function may be obstructed. When the irritation, infection and danger of obstruction have been removed by the lithotomy, the other kidney may be operated on and removed if it seems advisable.

3. In cases in which the patient is in excellent physical condition, and the stones are of moderate size and advantageously situated, the renal function only slightly reduced and but little or no infection present, both stones may be removed at the same time.

#### PATIENTS NOT OPERATED ON.

There were 33 cases in which a very evident diagnosis of bilateral nephrolithiasis was made, and the patients were not operated on. No operation was advised, for various reasons, in 21 cases, and in 9, operation was advised but the patients did not return. Two patients were operated on for coincident malignancy in other parts of the body, and in one case the patient is awaiting operation.

Of the patients regarded as inoperable the predominating symptoms in nine were those of renal insufficiency. The history of pain was either entirely absent or of secondary importance. Our attention was called to the possibility of renal lithiasis by the presence of pus in the urine. It was found necessary to make a roentgenogram in every case in which there was pus in the urine, even if there had been no history of pain. While this necessitated a large number of negative x-ray exposures, nevertheless the frequency with which lithiasis was thus discovered made the procedure worth while. The renal insufficiency is usually the result of long-standing infection. Of particular interest is the fact that five patients in this group complained primarily of gastric symptoms which were frequently the only subjective evidence of renal insufficiency to be noted. The clinical data of renal insufficiency differ from those usually observed with the ordinary type of nephritis, in that there is no increase in blood-pressure, and little or no evidence of other circulatory disturbance. In practically every case the phenolsulphonephthalein output was markedly reduced, and in four instances the estimate was either zero or a faint trace. The stone was exceptionally large in the majority of instances, which explains the absence of acute pain, since large stones seldom obstruct urinary drainage.

In five other patients, although there was more or less clinical evidence of disturbance of renal function, the predominating symptom was that caused by marked secondary infection. Puru-

lent urine was secreted by both kidneys and the symptoms were marked by frequent attacks of chills and fever. In three of these cases there were multiple stones of variable size, and it was evident that their removal would be followed by considerable destruction of the kidney-tissue. It is this form of bilateral nephrolithiasis which offers the poorest prognosis following operation. One of the patients with multiple large stones was allowed to return home, and three years later was reported to be in fair health. Had she been operated on and the stone removed, it is a question whether she would have lived as long. In the other two patients the stones were small and evidently secondary to well-advanced pyelonephritis, the symptoms being due to renal insufficiency as well as to infection in one; the other was markedly benefited by pelvic lavage, but because of the absence of acute symptoms, operation has been deferred.

Two patients had bilateral hydronephrosis, complicated with stones; a point of unusual interest, in that the stones were very evidently of secondary formation in a primary hydronephrosis. The stones were small and round and could scarcely be the etiologic factor of the urinary obstruction; they were evidently secondary deposits in the alkaline residual urine. Neither of these patients had secondary complication to warrant immediate operation, and when last heard from they were in fair health.

In two instances the stone was discovered accidentally. One patient complained of gastric symptoms only, and was operated on for acute duodenal ulcer. The other had symptoms of marked circulatory disturbance and hypertension. Operation was not done in the case of one patient because the degree of cardiac insufficiency made it inadvisable. One patient was discovered to be pregnant at the time of examination, and operation was deferred until after pregnancy terminated. The patient had previously gone through an uncomplicated pregnancy without symptoms of nephrolithiasis and it seemed advisable to allow the pregnancy to progress.

Two patients had been previously advised of stones in both kidneys, but they had not had symptoms of any kind in recent years. There was little or no evidence of infection in the urine and the renal function was but slightly impaired. Because of the previous history and evident tolerance of these patients, it did not seem best to remove the stones. In the presence of large or multiple stones which are not causing acute pain, suppuration or hemorrhage, the advisability of operation is questionable. The patient acquires a tolerance to the stones and will often have a better prognosis than if they are removed. If the stones are small and the function is not too greatly diminished, operation may be advisable in spite of the fact that there are no acute symptoms. If, however,

there is considerable kidney-destruction, the removal of large stones causes so much damage to the kidney-tissue that death frequently results soon after operation. The possibility of stones recurring and then being situated so as to cause urinary obstruction, must also be considered.

*Stone-Forming Kidneys.*—A considerable group of patients, with pain referred to both kidneys, have been examined who gave a history of having passed stones repeatedly, but who at the time of examination were found to be negative. Several of these patients had passed a stone within a week or so following thorough examination, including repeated roentgenography, cystoscopy, and pyelography. With a definite history of colic referred to the kidney, in spite of negative roentgenographic and cystoscopic data, a negative diagnosis of lithiasis should be made with caution. The inability of the x-ray to show this type of stone would lead us to believe that the occurrence of bilateral lithiasis is more frequent than can be ascertained by our present methods of diagnosis. The tendency to repeated stone-formation on the part of the kidney is most interesting. That it may be due to some disturbance in metabolism is suggested by the frequency with which the formation ceases after the diet has been corrected. Several of the patients with bilateral nephrolithiasis gave a history of having passed stones. In the presence of large or multiple stones it is probable that the stones passed spontaneously have been either single stones from a group or portions of single large stones.

#### PATIENTS OPERATED ON.

Both kidneys were operated on in 33 patients and one only in 29 patients. Seven of the 29 patients were advised to have both kidneys operated on but they refused. In the remaining cases, either the stone was so small that it was believed that it would be passed spontaneously, or the condition of the patient did not permit of operation. Five of this group passed the stone from the other side spontaneously. The destruction of renal tissue consequent to the search and removal of very small stones is so great, that it is usually best to await further developments, providing the patient can be kept under observation. When it is found advisable to remove such stones, pyelography has proved of great aid in their identification and localization.

*Nephrectomy.*—In 22 patients a nephrectomy of one kidney was found advisable because of the advanced destruction of the organ. In 7 of these patients a nephrectomy alone was made; in 15 it was found necessary to do either a pelvolithotomy or nephrolithotomy on the other kidney.

#### POSTOPERATIVE RESULTS.

There was no operative mortality, which would indicate that patients with bilateral nephro-

lithiasis, when properly selected, offer no greater operative risk than with unilateral lithiasis. There were ten deaths reported subsequent to operation, all within less than a year, the majority presenting clinical evidence of renal insufficiency.

#### SUBSEQUENT EXAMINATION.

Twenty patients were examined at varying times following operation, and recurrences were found in 5. In correspondence with other patients, 3 gave a history of having passed stones from the kidney operated on, and 4 gave a history of severe pain, which we regarded as probably due to recurrence, thus making the total number of recurrences 12 (19.35 per cent.). A previous review of patients with unilateral lithiasis showed a total recurrence of less than 10 per cent. It is evident, therefore, that the recurrence in bilateral nephrolithiasis is fully twice as great as with unilateral lithiasis.

In the 22 cases in which it was found necessary to do a nephrectomy because of calcareous pyonephrosis, six patients died within a year following operation. The prognosis, therefore, in cases of advanced calcareous pyonephrosis on one side is very grave. Subsequent examinations were made in 5 of these patients, recurrence being noted in but 1. Later, letters were received from 3 patients, all of whom appear to be fairly well.

#### UNILATERAL LITHIASIS WITH DISEASE IN THE OPPOSITE KIDNEY.

There were fifteen cases of stone in one kidney and disease in the other. This group does not include a large number of cases in which an occasional pus-cell was found in the catheterized specimen from the opposite kidney. A few pus-cells are easily picked up by the ureteral catheter from the bladder-fluid and should have no practical significance, provided other cystoscopic data are negative, and the function of the kidney is found to be normal. But with definite evidence of infection and disturbance in function in the other kidney, the question may arise whether or not operation would be advisable.

Among the various conditions found in the opposite kidney, pyelonephritis to a moderate degree was found in 6 cases, pyonephrosis to such an extent that the kidney was functionless in 5, hydronephrosis in 3 and tumor in 1.

#### PYELONEPHRITIS IN THE OPPOSITE KIDNEY.

In the presence of pyelonephritis in the other kidney, it is advisable to ascertain as nearly as possible, its functional activity. When the functional test is normal the infection may disappear spontaneously following nephrectomy. When the function is moderately low it is advisable to institute pelvic lavage and catheter drainage, preliminary to operation. Uncomplicated pyelonephritis is usually painless. There

was no pain referred to the kidney with pyelonephritis except in one instance, and the patient gave a subsequent history of having passed a small stone, with colic referred to the kidney where a pyelonephritis only had been previously diagnosed. When, therefore, a pyelonephritis on the opposite side is accompanied with pain even though the roentgenographic evidence is negative, we must suspect the possibility of stone lodged either in the ureter or kidney, and an exploration may be justifiable. Stofé secondary to a chronic pyelonephritis is not a rare complication to renal infection, and was found in two of our patients. Removal of the stone, however, does not necessarily effect improvement in the pyelonephritis.

In two patients the nephritic element predominated and the infectious process seemed to be of secondary importance. The stone was removed from the cortex or end of the calyx, and it was hoped that its removal would improve the renal function. While both the patients made a good temporary recovery, on subsequent correspondence and examination no definite change was noted in the condition.

One patient had a peculiar anomaly in that he had a reduplication of both ureters and pelves. The stone was situated in the upper pelvis of the left kidney which was independent from the lower pelvis. The stone was removed by bisection of the kidney. Pyelonephritis remained in the lower pelvis and was also present in both pelves on the right side. The patient was recently examined (six years after operation) and was found in a fair degree of health in spite of the persisting pyelonephritis which seemed to be no further advanced since the previous examination.

Inflammatory destruction of the kidney containing stone was so advanced that nephrectomy was necessary in three cases; the pyelonephritic kidney was left to carry on the function. Subsequent data from two other patients lead us to believe that they are in a fair state of health. Whether or not the increased function in the remaining kidney had any therapeutic effect would be difficult to determine.

#### PYONEPHROSIS IN OPPOSITE KIDNEY.

With pyonephrosis in the second kidney the indications for operation may be confusing: (1) When the function of both kidneys is greatly destroyed and there are no acute complications, the condition is not operable. (2) When there is even a small amount of normal tissue remaining in the calcareous kidney and there are acute symptoms which require relief, nephrolithotomy and drainage of the infected areas are indicated; the pyonephrosis in the opposite kidney being left undisturbed. (3) When the renal stone is not causing any acute disturbance and there is either pain or evidence of systemic infection from the opposite kidney, immediate nephrectomy of the latter is indi-

cated. In this series there were a number in the first group, which have been previously referred to; there were 2 in the second group and 3 in the third group. The prognosis in the first two groups is necessarily very poor, all patients being reported dead within a few months after operation. In the third group there is usually a marked improvement in the condition of the patient. This is usually accompanied by improvement in the function of the remaining kidney even though stone is present. In one patient, the combined function rose from 19 per cent. before operation to 40 per cent. a month after operation. The predominating symptoms in 3 of the patients were on the side in which the stone was located and in 2 patients on the side of the pyonephrosis. The discovery of stone in the latter was accidental.

#### HYDRONEPHROSIS IN THE OPPOSITE KIDNEY.

There were 3 patients with hydronephrosis in the opposite kidney and in 2 of these the hydronephrosis was bilateral with secondary formation of stones. From the long duration of symptoms, extending back to childhood, it would seem as though the hydronephrosis were of congenital origin, although unilateral hydronephrosis of recent origin with secondary stones is not an uncommon condition. In one patient the stones had caused so much infection that the kidney was largely destroyed and a nephrectomy was necessary. The patient, however, died three months after leaving the Clinic. In another case a pelviolithotomy was done and the patient reports some improvement with persistence of pain in both kidneys. The third patient was not operated on and reports the passage of numerous small stones and the cessation of symptoms a short time after being dismissed. It is evident, therefore, that in the presence of complicating hydronephrosis a conservative operation is indicated when possible.

#### TUMOR IN OPPOSITE KIDNEY.

In one patient a tumor was found involving the opposite kidney, which proved to be sarcoma. A nephrectomy was done but was only partially successful since there was infiltration in the surrounding tissues. No further operation seemed advisable.

#### STONE IN A SINGLE KIDNEY.

In 7 patients, with only one kidney, a stone was removed. In 5 of these nephrectomy had been done elsewhere some time previously; in the other 2 there was no evidence of the existence of the opposite kidney, and there was no clinical evidence of previous renal disease, so it may be inferred that the condition was congenital solitary kidney. In 3 of the 5 cases in which a nephrectomy had been done, this was necessary because of pyonephrosis—in 1 because of hydronephrosis, and in 1 because of acute pyelonephritis.

The operations performed on the single kidney were nephrolithotomy 3, and pelviolithotomy 4. In one of the cases of nephrolithotomy the patient was operated on three times for recurring stone, extending over a period of six years. The patient died seven years after the first operation. One other patient was also operated on for repeated stone, but is now alive and well. This illustrates the great degree of tolerance which a single kidney may have for removal of recurring stone. One patient developed uremia one month after operation and died. One patient had a subsequent x-ray examination, which was negative; there were no subsequent data in the remaining three cases.

A peculiarity noted in several of the cases was the high phenolsulphonaphthalein output of more than 50 per cent., in spite of the presence of a stone of considerable size in the kidney. Had the opposite kidney been functioning, the output would have been considerably lowered by the presence of the stone, and the other kidney would have been performing a correspondingly larger amount of work. In the absence of the opposite kidney, however, the entire function was forced upon the one, and the stone-irritation did not have the usual effect. There was no operative mortality in this group. Two of the patients have since been reported dead. The others are living, and to all appearances are in comparatively good health.

#### HORSESHOE OR FUSED KIDNEY.

Five patients were operated on when lithiasis was found in a fused or horseshoe kidney—in 4 the lithiasis was confined to one-half of the kidney, and in 1 there was a stone in both sides of the kidney. In 2 patients with unilateral involvement, secondary infection had advanced so far that bisection of the kidney was necessary. In 2 a pelviolithotomy was performed. In the case of bilateral nephrolithiasis, heminephrectomy was necessary on one side, and a stone was removed from the lower ureter by cystoscopic manipulation on the other. Three of these patients are alive from one to five years after operation.

#### SUMMARY.

1. In 17.2 per cent. of the patients in this series there was bilateral renal involvement. The percentage of bilateral lithiasis was 12.3.
2. Bilateral as well as unilateral lithiasis occurred twice as often in the male as in the female.
3. Pain in bilateral nephrolithiasis was unilateral in 64 per cent and absent in 8 per cent of the cases.
4. Bilateral stones were found most frequently in the pelves and calices.
5. Combined renal functional tests were of practical value only when normal or extremely low.
6. To ascertain the comparative degree of



function in the two kidneys, the functional test was of value only when it was zero or a trace, normal or excessive.

7. The functional test, x-ray examination and cystoscopic inspection may be insufficient in determining the degree of healthy renal tissue remaining, and exploration only can determine this.

8. Indications for operation: (a) The kidney with acute complications should be operated on first; (b) without acute complications the kidney with the better function should be operated on first; (c) occasionally simultaneous bilateral operation is advisable.

9. Patients may be inoperable because of renal insufficiency, secondary infection, kidney destruction or constitutional complications.

10. Patients with large bilateral stones causing no symptoms or complications are better off without operation.

11. The operative mortality in this series was zero; the total number of deaths after operation 10; these patients died less than a year following operation. The operative mortality with calcareous pyonephrosis is much greater than with other forms of bilateral lithiasis.

12. The recurrences in cases of bilateral nephrolithiasis was 20 per cent; in unilateral lithiasis, as previously reported, it was 10 per cent.

13. When there is stone in one kidney the most common forms of disease in the opposite kidney are: Pyelonephritis, pyonephrosis and hydronephrosis.

14. With unilateral lithiasis the opposite kidney may be so badly diseased that a preliminary operation may be advisable on that kidney.

15. Stone secondary to pyelonephritis, when removed, prevents further renal destruction but is not of curative value.

16. When the nephritic element predominates, removal of the stone is not of much therapeutic value.

17. A single kidney has a great degree of tolerance for repeated operation for stone.

18. In a single kidney the phenolsulphone-phthalein output usually remains high in spite of the presence of an uncomplicated stone which is probably due to compensatory hypertrophy.

19. Fused or horseshoe kidneys permit of repeated operation for lithiasis which may, if necessary, include hemi-nephrectomy.

fragments in all three, shown by x-ray, leads me to report them. All three were seen shortly after the accident, and showed the typical picture of fracture of the neck of the femur, with eversion. The method used for reduction is the method described by Whitman, as follows: Patient, having been anesthetized, is placed upon the back, the head and shoulders supported by a box of sufficient size, pelvis resting on a sacral support. The disabled member is first flexed to disengage folds of capsule that may have fallen between the fragments. It is then extended and rotated inward to the normal attitude, and under traction and counter-traction the shortening is completely overcome, as demonstrated by measurements. The sound limb is then abducted to the limit to demonstrate the normal individual range and to fix the pelvis. The limb on the injured side is then slowly abducted by the assistant, while the surgeon, supporting the joint, pushes the thigh upward from beneath, to force the two fragments against the anterior part of the capsule. When the limit of abduction has been reached the capsule will be tense, thus directing the fragments, now in a horizontal plane and end to end, toward one another, and finally forcing the contact. The fracture is as if it were locked by internal splinters, and it is only necessary to hold the limb in the attitude of complete abduction and complete hyperextension by a plaster spica.

CASE 1. Mr. A., aged 64 years. Occupation, stone-cutter. Oct. 25, 1916. In the evening, while coming home from work, the patient started to cross street and was struck by a news team and knocked down, striking on right hip. He was brought home and seen shortly afterwards.

*Physical Examination.*—Well developed and fairly nourished man, past middle age, very nervous, showing some evidence of shock. Heart action soft and slightly irregular. Right leg



FIG. 1.—Case 1. Before reduction.

### Clinical Department.

#### FRACTURE OF THE NECK OF THE FEMUR: REPORT OF THREE CASES.

By CHARLES E. AYERS, M.D., WORCESTER, MASS.

THESE three cases, occurring in people past middle age, and treated by the Whitman abduction and fixation method with such satisfactory end-result in one, and anatomical reposition of



everted; slight bruise on thigh. Slightest movement caused intense pain. Measurement shows right leg three-quarters of an inch shorter than the left.

X-ray taken the following morning by Dr. A. E. O'Connell showed typical fracture of the neck of the femur. On the evening of the 26th, under ether, fracture was reduced and put up in the typical Whitman abduction position in a long plaster spica. On the fourth day patient was allowed to sit up in bed with right leg hanging over side.

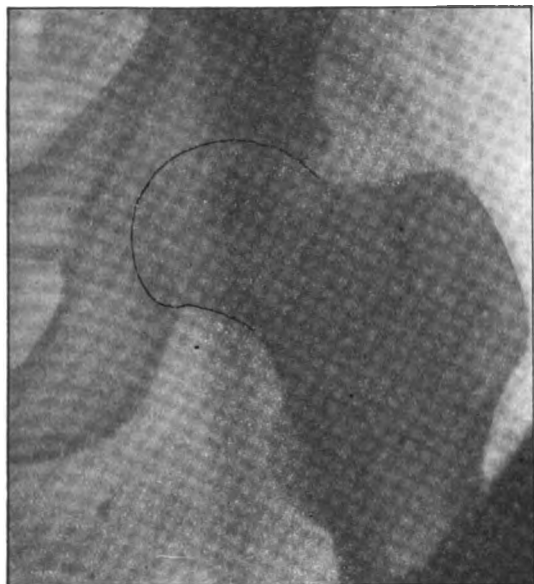


FIG. 2.—Case 1. After reduction.

On the sixth day we got him standing with weight on cast and crutch under left arm for balance. Patient walked every day from that time on.

X-ray was again taken at Dr. O'Connell's office, patient going in taxicab, and the reduction is here shown. (Fig. 2.)



FIG. 3.—Case 2. Before reduction.

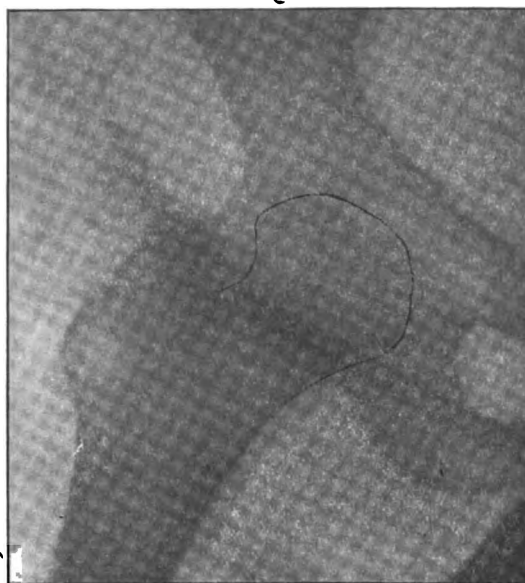


FIG. 4.—Case 2. After reduction.

Cast was renewed in eight weeks and a new one applied after four weeks more. This was cut off at the knee to allow motion. Cast was entirely removed at the end of sixteen weeks, and passive motion begun of hip and knee.

*Present Condition.*—Man is working in a wrench factory; walks without perceptible limp; there is no shortening. Patient is thoroughly satisfied and suffers no inconvenience.

**CASE 2.**—Mrs. C., aged 67 years. A well developed and nourished woman, active for her years. Three days previously fell from bottom step of basement stairs, striking on left hip. Was seen by her physician and referred to Memorial Hospital. Examination of left leg shows one-half inch shortening, with eversion of limb and typical picture of fracture of the neck of the femur.

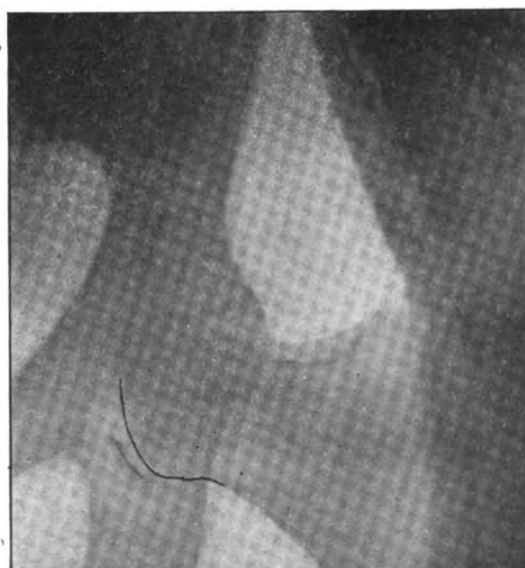


FIG. 5.—Case 3. After reduction.

X-ray (Fig. 3) shows condition. Under ether, fracture was reduced according to Whitman method, and plaster spica applied. X-ray taken two days following shows excellent reposition of fragments. Patient is still in hospital, but suffers no pain and is up every day in wheel-chair.

CASE 3. Mrs. K., age 50, a well developed and nourished woman. Tripped over door-sill, falling heavily on right hip. Seen by Dr. Curley of Milford and referred to Milford Hospital. Seen in consultation with Dr. Curley three days after injury. Patient lying in bed with hip slightly flexed, abducted slightly and everted. Measurements show right leg one and one-fourth inches shorter than left. Attempted motion painful, and picture is typical of fracture of the neck of the femur.

Unfortunately the x-ray had not been installed, so we were unable to get a picture before reduction. Patient was anesthetized and fracture reduced as in previous cases and plaster spica applied. In the meantime, the x-ray apparatus having been installed, a picture was taken through the cast, showing perfect reduction. Patient is now at the hospital, sitting up in bed and in wheel-chair without any apparent discomfort.

### Society Report.

#### AMERICAN UROLOGICAL ASSOCIATION.

THE annual meeting of the New England Branch of the American Urological Association was held at the Harvard Club of Boston on Thursday evening, November 15, 1917. Officers were elected for the ensuing year, and Drs. H. H. Howard and R. C. Wiggin were elected to membership. The program was as follows:

#### PRESENTATION OF SPECIMENS, INSTRUMENTS, ETC., AND REPORT OF CASES.

DR. QUINBY: I want briefly to call to your attention a subject old and yet ever new; illustrated by four cases with specimens of the commonest tumor of the kidney, the so-called hypernephroma—a very interesting tumor in spite of the fact that it is so common, because we know so very little about it pathologically. I have selected four cases illustrating, in the first place, the clinical diversity shown by kidneys bearing such tumors, and later I have just a few words to say on some of the more recent pathological ideas regarding this type of tumor.

In looking for the signs of these neoplasms we are usually taught to expect to find tumor, hematuria and pain. Very often, however, one or the other of these signs and symptoms is absent, and the diagnosis of a tumor of the kidney in such instances can be a very difficult diagnosis to make. This is illustrated by one of these cases. I will read them hastily, only mentioning the important points.

The first was a woman thirty-six years of age, who complained of a tumor of the abdomen. She had been told it was a tumor of the kidney, and she and her various physicians had known of it for nine years. Occasionally this mass was tender

and gave slight discomfort. She had gone through four pregnancies, the last one being two and a half years before I saw her. Since the last pregnancy this mass had increased in size. She had lost but little weight. The diagnosis was confirmed by an injection of thorium, which showed a renal pelvis so deformed that there was hardly a suggestion of the outline of the normal calyx. The renal function, as determined by the phthalein output, was, on the left side 11%, and on the right side 10% in half an hour, illustrating the well-known fact that frequently in cases of kidney tumor the divided function is of no significance. The total function in this case for a two-hour period was 64%. The urine was entirely normal, excepting for an occasional cast. The tumor was removed. This case is typical of that group in which the tumor mass is practically the sole complaint.

The second patient complained of blood in the urine and had lost much weight. For ten months he had had recurring attacks of hematuria, during which his bladder would fill with blood. He was a cook on a coasting schooner, and so would go to a hospital where he happened to be in port, and be catheterized, and then go on; but the bleeding would recur in a few weeks. He had been catheterized in New York and at the Boston Relief Hospital only a few days before coming to the Brigham Hospital for hematuria. He presented on entrance marked strangury, a bladder distended up to the umbilicus, and complete inability to empty it of the blood clots. Instrumentation showed an exceedingly tortuous urethra with multiple strictures, so that the first thing to be done was a suprapubic drainage of the bladder under local anesthesia. This was followed in a few days by nephrectomy on the right side. A tumor mass was found attached to the kidney, which had penetrated through the capsule and was adherent to the retroperitoneal tissues. About a month later he developed a fistula in the wound, undoubtedly from local recurrence of the growth, so that, as a third operation, I made a laparotomy and found that the intestine involved was the descending portion of the duodenum. It was retroperitoneal, of course, and in a position exceedingly hard to control, on account of the friability of the tissues invaded with neoplasm. I tried to sew it up, but was unsuccessful. It was necessary to resect the pylorus and establish a posterior gastro-enterostomy. The patient died the next day. This second case is illustrative of the group in which hematuria is the prominent symptom.

In the third case the symptoms were different. There was pain in the back, but no loss of weight and no hematuria. It occurred in a woman fifty-seven years of age who had passed the menopause seven years before. She complained only of this pain and a swelling on the left side. On examination she showed a mass occupying the whole left quadrant, extending two or three inches below the umbilicus. Here the renal function did show some change. On the right, the normal side, it was 15%, whereas on the tumor side there was only 3% in a half hour. But here, again, the total phthalein was fairly reasonable, namely, 50%. The specimen shows that the tumor mass had been extensively converted into large blood cysts, and it was only after a search that I could find anything characteristic of hypernephroma tissue. This case is illustrative of that group which complain of pain.

Though tumor may be evident, it is not this for which the patient seeks relief.

The fourth case illustrates well that group in which it is hardest to come to an accurate diagnosis. These first three were comparatively easy, as they showed either pain or hematuria or a tumor. The patient was a very intelligent man who conducted a preparatory school for boys. He was sixty-two years old and had been entirely well until three weeks before entrance, when he came to the hospital complaining of a severe smarting sensation in the skin of his back below the angle of the right scapula. He said it felt as if the flesh were raw. A few days later he had the same sensation on the left back in an analogous place. The sensations came on forty or fifty times a day and lasted a few minutes. The touch of his clothing caused discomfort, but pressure and motion did not do so. About these very sensitive areas there was an ache, which at times radiated around to the front at the sternum. He also complained of pain in the right hip joint. There was no hematuria, and he presented only this area of extreme hyperesthesia and a continued slight pyrexia. In diagnosis the first thing to think of was shingles, in which the rash had not as yet come out, but that is not very often a bilateral affair, and as he was further observed it was immediately seen that the usual time for the appearance of a zoster rash had passed. The rash usually comes out much earlier than three weeks. Nine days after his entrance to the hospital we found a little microscopic blood in the urine. This led to exploration of his kidneys, and it was found that there was definite bleeding from the left side. There was never any palpable tumor, though one was suspected on account of the continued pyrexia, otherwise not to be explained. We were able, however, to show by cystoscopy a very definite though small amount of bleeding coming from the left side. Exploration of the left kidney showed a tumor, which took origin more in the cortical region of the kidney than in the other cases, and which had already made many metastases. In this instance it is interesting to note that the tumor had spread by the lymphatic channels, as well as by the venous, and had penetrated the diaphragm. The symptoms were caused by nerve-root involvement at about the sixth dorsal. Of course, extensive operation was of no avail. He steadily lost in weight and strength, and died within thirty days of the exploratory operation. Autopsy showed what I have just mentioned, that is, the nerve-root involvement which caused the pain. In this case any medical or surgical measure must come too late because the tumor caused no symptoms until the nerves were involved in metastases.

In regard to the pathology, you know there has been a considerable amount of argument advanced as to the origin of such a tumor. Dr. Wilson has put forth probably the most reasonable hypothesis regarding their origin. He says that they are not hypernephromata, but nephromata, and that the tumors take origin in the remains of the embryonic renal blastema which has not made the usual connections with the Wolffian duct, as it grows up from below to unite with the kidney tissue. The pathologists have considered them hypernephromata, following Grawitz, who based most of his claims on the fact that they contained fat and were similar in structure to the adrenal. As a matter of fact, more recent histological and chemical methods have shown that they do not contain much fat. What

was considered to be fat is glycogen, and the clear transparent cells which one sees are clear because the method of fixation dissolves out the glycogen from the cell bodies.

During the investigation of tumors by the various cancer commissions all over the world, it was at one time hoped that the demonstration of mitochondria would throw some light on the question of malignancy. The theory was advanced that benign tumors had mitochondria in them and that cancer showed none. That this is far from true will be shown by the slide which I have under the microscope. For we know that these hypernephromata are always malignant but, nevertheless, their cells contain more mitochondria than any other type of tumor thus far studied. Thus the significance of such intracellular bodies is still a matter of speculation.

DR. PHELPS: I should like to report a case and show a picture of passing interest. A girl was admitted to the hospital, suffering from the ordinary symptoms of a cystitis. The cystoscope revealed what I thought was a small-sized stone. At operation we removed an ordinary rubber catheter, which, as near as we can find out, had been in the bladder for about five months. It was probably inserted to produce abortion, by some one not familiar with geography.

DR. E. B. YOUNG: I have had a case of somewhat the same nature as Dr. Phelps. This is a piece of gum elastic catheter which I removed from the bladder of a young woman twenty-three years old. It was inserted by the patient herself to produce abortion.

This catheter had been in the bladder for only two days, and it is remarkable for the amount of encrustation and other disturbances which it showed in that short time. The bladder was very much injected, tremendously edematous, and the folds of mucous membrane practically hid the catheter entirely, so that I was lucky to find it. The urine was smoky and foul. The patient has made a good recovery.

DR. GILBERT SMITH: I should like to mention the case of a young man at the Massachusetts General Hospital, who came in with a diagnosis of stricture. He did have a stricture, which was apparently traumatic, and he denied all venereal disease. After the stricture was cut we cystoscoped him because there were symptoms of stone and some blood, and we saw a bougie catheter coiled up in his bladder for its entire length. We removed it by the suprapubic route, under local anesthesia. Careful questioning failed to elicit any definite time when it was put in, unless it was twenty-three years before, when he said he was in the hospital for a broken leg or something like that, and had been unable to urinate, and thinks he was catheterized at that time.

Why the bougie catheter was used, I do not know, but there it was, and it was quite difficult to remove. It was not very much encrusted, but the varnish was pitted, and the thing was rough from the corrosive action of the urine.

DR. TENNEY: I wish to report an interesting case which occurred a month or two ago, when a glass clinical thermometer was removed from the bladder of a young woman seventeen years of age. The thermometer was unbroken. I had intended to

bring it with me here tonight, but I forgot it. In the center is an encrustation of lime salts something like three-quarters of an inch in diameter. This thermometer was given to me by the doctor who removed it, and he pulled it out by main force.

DR. KEEFE: I should like to mention the case of a young man who had a hat pin with a black head, partly in his bladder and the rest of it in the urethra. We could not grasp it with the forceps, so I forced it down a trifle more and then pushed the point of the pin through the root of the penis. I then pulled the hat pin out, leaving the black head and reversing the direction of the penis, the head of the pin was made to emerge first from the meatus.

Paper by DR. W. F. BRAASCH, Mayo Clinic:

#### LITHIASIS WITH BILATERAL RENAL INVOLVEMENT.\*

##### DISCUSSION.

DR. A. L. CHUTE: It seems perfectly hopeless to try to discuss points in a paper that has been so wonderfully presented as this one, but there are just two or three things I would like to mention very casually as they have occurred to me.

The first one is the lack of symptoms, that Dr. Braasch spoke of as causing one to think of stone in the kidney. He spoke of the finding of pus as being sufficient cause, but I do not think one should wait for pus in the urine before going over these patients with great care. There is a possibility of not seeing these stones with the most careful radiographic examination. I remember a case I spoke of at the meeting last year, which had been missed with the radiograph. The picture showed the outline of the kidney perfectly, and yet there was absolutely nothing to be seen in the line of a stone. When I cut down on that kidney I got a small, rather longish stone. To determine why we had not seen it we tried radiographing the stone in water. In the first place, it proved to be a uric acid stone. Left alone on the plate it showed a good shadow, but in water it showed absolutely nothing. The reason why x-rays were negative was that it was lying in the ureter with some urine around it. It shows that there are sometimes definite stones that we do not get by radiography, and that where symptoms point very definitely to stone in the kidney it is not sufficient to get a negative radiograph and stand by and do nothing.

Dr. Braasch spoke about leaving the stones in the kidney. To be sure, there was a pretty good reason for it every time he did it, yet it seems to me one has to have a very good reason for leaving them alone. In any case we are sounding a death-knell, so to speak, and it is only a question of time, although in some cases the death-knell would be sounded sooner if we took them out than if we left them in. On the whole, I think the best plan is to take out the stone as soon as feasible. Of course, there may occasionally be some reason why we have to put it off, but it is only a question of time when the kidney is going to be destroyed.

I want to express again my pleasure in Dr. Braasch's paper, and my great interest in it.

DR. KEEFE: I have thoroughly enjoyed listening to Dr. Braasch's lucid presentation of his subject. The vast experience which Dr. Braasch has had overwhelms me, and I do not feel that I can add anything that would be illuminating.

DR. TROWBRIDGE: May I simply make an allusion to what I saw three weeks ago at the Mayo Clinic? Dr. Judd was operating on a kidney, and he said to Dr. Braasch, "Is there any stone here, doctor?" Dr. Braasch said, "Yes," and I was rather amused at the uncertainty that Dr. Judd felt after exploring the kidney by making a slight incision in the pelvis. With his finger he brought out a little stone, and I felt then the great confidence that Dr. Braasch had in his cases, and how, when they had been examined, his conclusions were certainly justified.

DR. F. H. LAHEY: I have nothing to add to the paper, but in connection with Dr. Quinby's case, I would like to recall to your attention the method of treating duodenal fistulae, which occasionally occur in connection with right-sided nephrectomy, by means of an electrically driven constant suction pump. Apparently duodenal fistulae are rather unusual, but they occasionally occur following right-sided nephrectomy, and I think we should all bear in mind the possibility of closure of these fistulae by the constant suction pump. This is a pump which is worked very much like a dentist's pump, constantly keeping the fistula clear of fluid, and, particularly in small ones, allowing them to close, and bringing about a cure, which could be accomplished in no other way.

DR. G. O. CLARK: I would like to ask Dr. Braasch how many true cortical stones he has been able to demonstrate, in contradistinction to those formed in the pelvis?

DR. GILBERT SMITH: I wish to express my appreciation of Dr. Braasch's coming here, and of his very thorough presentation of his subject. Of course his experience has been very much greater than that of any one of us in regard to the matter of bilateral stones.

With reference to cases of bilateral stones that should not be operated upon, I have seen two cases that I remember of that type. One was a man who made the choice himself. He came to be cystoscoped but lost his courage. He had such huge calculi in both kidneys that I thought removing them would require nephrotomy on both sides, and would probably prove fatal.

The other case was that of a woman about fifty-five years of age who came to the out-patient clinic. She had a pyuria and symptoms of cystitis. There were large stones in both kidneys. Her total function was 5%, and we advised her not to have anything done.

The question of recurrence of the stone is very interesting. It seems to me there are certain types of cases which might be called malignant lithiasis, because if a stone is removed one year the patient comes back the next with another stone. I looked up a series at the Massachusetts General Hospital to find something about the composition of the stones in all the bilateral cases we had studied. The series was small, as there were only some half-dozen cases of bilateral stones. I found they were composed of calcium and triple phosphates, whereas a larger part of the unilateral stones and stones in the ureter were composed of oxalates. The phosphatic stones are the more rapidly growing. We have tried the effect of putting patients on a diet to prevent the formation of these malignant

\* See, JOURNAL, page 292.

stones, and have given them a teaspoonful of chalk after each meal, following the work which was done at one of the United States Experiment Stations in Ohio, which proves that the output of phosphates in the urine is very much decreased if you can form insoluble salts in the intestines. I do not know whether it will prove to be any good or not. It seemed wrong to let these patients go on forming stones without doing everything possible to avoid it.

That brings me to another point, which is that it is the surgeon's duty to operate with the idea of preventing recurrence. For instance, one might have a dilated calyx which contains a stone. If you remove the stone and do nothing to the calyx, you can be sure there is retention of urine in that calyx. I think that in some cases drainage of the kidney pelvis to reduce inflammation is good. A woman we did a few months ago had a pelvis filled with fine stone and gravel. It was solidly filled up with gravel, and the walls of the pelvis were covered with incrustation. We got out all we could and then drained the pelvis with rubber tubes. Of course she had a fistula, lasting for three weeks. I then put in a ureteral catheter. The fistula closed at once, and she went home with perfectly clear urine from that kidney.

In preventing the recurrence of stone after pyelotomy, there is not infrequently a pyelitis resulting, even if there was none before operation. In some cases, if you let the pyelitis run, the inflammation will favor the formation of stone in the future. One should try to prevent that by seeing that the pyelitis is cleaned up, if necessary washing out the kidney pelvis with silver nitrate a number of times to clean it out. In a couple of cases I did this, and the urine cleared up absolutely.

I want to again thank Dr. Braasch for the pleasure he has given us all.

DR. L'ESPERANCE: I wish at this time to thank Dr. Braasch for his very interesting paper. This interests me particularly because a year ago I passed a renal stone from my right kidney, and naturally what interests me greatly is the matter of recurrence. This stone was absolutely symptomless until I received a slight shock from a fall resulting from stubbing my toe. Following it, I accidentally noticed a hematuria, which continued for four months. It was impossible to demonstrate the presence of a stone by x-ray, until Dr. Dodd took pictures on a new machine recently purchased, and then only a faint shadow could be seen. In consultation with Dr. Hugh Cabot, it was agreed that, owing to the size of this renal stone, it would be passed without operation. By cystoscopic examination with the ureteral catheter in place, the position of the stone was shown to be about one inch from the orifice. Following several attacks of sharp pain, the stone was successfully passed through the urethra.

At the present time recurrence of the stone is what interests me mostly.

DR. QUINBY: In estimating the ability of the patient to withstand operation, I do not doubt that Dr. Braasch uses other methods than phthalein, but I want to make a plea for the use of blood urea esti-

mation in doubtful cases, as being more accurate in some instances than the phthalein. It is a more delicate test. The first signs of improvement, as also the signs of failing renal function, are most delicately shown by the nitrogen content of the systemic blood stream in cases where both kidneys are involved. In unilateral affections of the kidney, when the opposite kidney is doing its work well, of course the blood urea estimations would be normal.

There is one other point. I want to go on record as agreeing heartily with what Dr. Smith has just said. The formation of stone rests on two main factors: one is infection, and the second, stasis in the kidney or in the bladder. We should not only combat the infection, but also, wherever possible, surgically try to put the kidney in a condition where it will drain properly, because stasis is just as important as infection in the causation of stone formation.

DR. BRAASCH (closing): I wish to thank the members of the Society for their generous consideration of so long a presentation of statistics.

As to the existence of true cortical stones, I believe that they occur exceptionally, and then only secondarily to a localized area of necrosis. The majority of so-called cortical stones have their origin in the minor calices, and as they enlarge they invade the surrounding cortex.

The type of stone which is most frequently missed by the radiogram is the very thin, flat stone. If in taking the x-ray, the edge of the stone is exposed to the radiogram, it may easily be missed entirely. As Dr. Chute stated, we are occasionally justified in surgical exploration of the kidney where the patient's history and other data are strongly suggestive of stone, in spite of a negative radiogram. However, this should be done only in exceptional cases, and certainly not as a routine procedure.

In regard to the value of the blood-urea estimate, I have not discussed this because we have not employed it sufficiently to give any final opinion. After all, however, the practical value of all renal functional tests is not very great—so far as helping us to determine whether or not we shall operate is concerned. Our surgical judgment should depend upon the data derived from the radiogram, cystoscope, and physical examination—not upon the functional test. Where, however, the clinical examination leaves us in doubt as to the renal function, which occurs only in a very small proportion of cases, the functional tests may be of value. This is particularly true in the presence of marked renal infection, where toxemia of absorption leaves the patient in such a condition that he appears to be much sicker than he really is. The extremes of phthalein return alone are of practical value. If, on repeated tests, only a very low phthalein return (say 10% or less) is obtained, the advisability of operation in the absence of acute complications is questionable. A marked degree of blood-urea retention in conjunction with an extremely low phthalein return would be an additional factor against operating. Providing that there are definite surgical indications, I do not believe that a high blood-urea retention alone should render the case inoperable.

## Book Reviews.

*Operative Gynecology.* By HARRY STURGEON CROSSEN, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School, and Associate Gynecologist to the Barnes Hospital; Gynecologist to St. Luke's Hospital, Missouri Baptist Sanitarium, and St. Louis Mullanphy Hospital; Fellow of the American Gynecological Society, and of the American Association of Obstetricians and Gynecologists. Seven hundred and seventy original illustrations. St. Louis: C. V. Mosby Company.

The endeavor of the author has been to present the operative treatment of gynecological disease fully, in all its bearings. He says: "The time is ripe for a systematic presentation of the various operative procedures available for the treatment of each gynecological lesion. Gynecologic surgery is entering a new stage of development. The past may be designated the period of invention of methods. To such an extent has this been carried out that for the treatment of uterine displacement alone more than one hundred operative procedures have been devised. The new stage of development may be designated the period of adaptation of operative methods to the exact pathological conditions present in the individual patient. The period of development is as important as the preceding one, perhaps more so when considered from the standpoint of lasting benefit to the patient." The details of general surgical technic and operations on the adjacent organs are omitted.

Within these narrowed limits the subject is covered in nineteen chapters. The plan of the author has been well carried out, and the handling of certain topics leaves little to be desired. Retrodisplacements of the uterus and prolapse of the uterus and bladder are treated at some length, and the catalogue of operative procedures for retrodisplacements of the uterus is exhaustive. The chapter on chronic inversion of the uterus shows the book at its best. Relaxations of the pelvic floor are fully discussed, but in the treatment of vesicovaginal fistulas one misses references to certain well-known and long-tried methods of exposure, as well as other resources of plastic surgery.

The subjects of inflammatory diseases and new growths are well covered, but the value of bisection in pelvic surgery is apparently not fully appreciated. The method of applying the Wertheim parametrial clamps, as shown in Figs. 453 and 454, is not that used by Wer-

theim, and is distinctly less advantageous. The ureter should be freed and displaced laterally, and the clamps passed under the ureter from the median side. The Percy heat method of treatment of cancer of the uterus is well described and its value properly estimated.

Two timely chapters are on gynecological surgery in nervous patients, and on medico-legal aspects. These serve as indicating points which deserve attention, rather, as complete discussions.

The balance is not always well preserved. For example, the exhaustive list of operations for retrodisplacements of the uterus would better be relegated to a monograph or to a history of gynecology. The space devoted to ovarian transplantation is too great for the actual, though perhaps not for the potential value of the procedure. The list of operations at which a foreign body has been left in the abdominal cavity may not be too long to emphasize the danger of such an accident, yet it seems out of place in this book. The arrangement of the text might be improved by considering technique or technique and indications in a uniform order.

The book, in addition to these minor faults, has certain major virtues, and is to be highly recommended. The descriptions are clear and the illustrations are abundant, well-selected and adequate. In matters of opinion, the surgical judgment of the author is sound.

The press-work represents a marked advance from the author's medical gynecology issued by the same publishers.

*Candy Medication.* By BERNARD HANTUS, M.D., Professor of Pharmacology and Therapeutics, University of Illinois. St. Louis: C. V. Mosby Company.

This monograph, presumably the only book on the subject thus far published in any language, aims to present the author's method of medication through the medium of candy tablets, which he believes particularly effective in the administration of drugs to children. He describes the method, and machine required for making these tablets, and the uses to which they may be applied. He enumerates the drugs which may be administered by this method, and describes the method of constructing formulae for the manufacture of the tablets. More than half the book consists of a series of sixty-six prescriptions arranged in a formulary with full directions for the manufacture of each. The volume closes with an index and a series of nine references to previous writings on this subject by the author, and by Sawyer, Fuller, Schleimer, Wood and Lloyd. The subject is one of interest, and its practicability would seem to make it of value in the pharmacology and therapeutics of pediatrics.



## THE BOSTON Medical and Surgical Journal

Established in 1812

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, Inc.

THURSDAY, FEBRUARY 28, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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## CENTRALIZATION OF AUTHORITY VERSUS UNPAID BOARDS OF TRUSTEES.

IN these war times the atmosphere of strict military discipline and the centralization of all authority is very much in the air. As far as a fighting force like an army is concerned, centralization and the placing of authority in the hands of a few capable persons is much to be desired. It does not necessarily follow, however, that methods which for many years before the war have proved their usefulness and efficacy should be cast to one side and entirely done away with in order to conform with present military methods. There is a very present danger of this being done, however, in certain important instances, unless the medical profession protests against such an unwise procedure.

Take, for example, the question of the unpaid boards and commissions, which for many, many years have, in Massachusetts, demonstrated their value. There has been criticism in the past of

the work of such boards, whether they have been in charge of institutions for the insane, for the tuberculous, for delinquents, or others; but, notwithstanding these criticisms, and notwithstanding attempts to prove that this method of handling affairs is inefficient and wasteful, the fact remains that these unpaid boards of trustees and the work they are doing have stood the test of time and stood it well; the fact remains that our state institutions, whether for the insane, the tuberculous, or delinquents, stand among the best in this country.

The report of a Recess Committee on Administration and Finance, appointed to investigate and report on the question of the consolidation of various boards and commissions and the doing away with certain unpaid boards of trustees, is before the Legislature for consideration. Among others, it recommends that the Board of Trustees of Hospitals for Consumptives be transferred to the State Department of Health. Another bill, emanating from New Bedford, based, we believe, on personal grounds more than anything else, recommends the abolition of the Board of Trustees of Hospitals for Consumptives, and that its duties be transferred to a special bureau of the State Department of Health. The chairman of the Board of Trustees of Hospitals for Consumptives, and the other trustees themselves, would heartily welcome any such change as this, which would relieve them of many irksome duties, could it be demonstrated that such a change would benefit the cause of preventing tuberculosis in Massachusetts and the welfare of our unfortunate consumptives. We do not believe, however, plausible as this scheme sounds, that this can be demonstrated. We do not feel that this Board needs any defense; the work it has accomplished during the ten years of its existence in the prevention of tuberculosis in this State speaks for itself. It is well to bear in mind certain facts concerning the progress that has been made in fighting tuberculosis in Massachusetts during the past ten years. It, likewise, should be borne in mind that the State Department of Health has, of its own accord, and wisely, left the tuberculosis problem, to a very large extent, in the hands of the Board of Trustees of Hospitals for Consumptives, believing that by so doing it was in good hands.

When the Board above mentioned, of which the late Dr. Arthur T. Cabot was chairman and the guiding mind until his death, took hold of



the situation there was one state sanatorium, at Rutland, with 350 beds. The number of other beds in the state of Massachusetts was very limited. Since that time the state sanatoria at North Reading, Lakeville and Westfield have been built, bringing the total number of beds in our state sanatoria up to well over 1000, while, in addition, under the direct supervision of the Board of Trustees of Hospitals for Consumptives, local tuberculosis hospitals have been constructed, and at the present time county hospitals are being built, which will bring the total number of beds to well over 4000. We believe that the proportion of beds to the population is as great in Massachusetts, if not greater, than any other State in the country. The death rate from tuberculosis per 100,000 population in Massachusetts in 1907 was 150.6. The present death rate is 119.5. The weekly per capita cost at the state sanatoria up to the present war was in the neighborhood of \$9.00. It is naturally more at the present time. We believe, however, that this weekly per capita cost is as low, if not lower, than that of other institutions outside of Massachusetts. Despite the fact that the state sanatoria are not limited to incipient cases, we believe that the results of treatment will compare favorably with those of other state sanatoria elsewhere. We believe that it would be impossible to combine in any single-headed commissioner, of no matter how high a standard, the quality, skill, and faithfulness to its aims and ideals that is now to be found in the present board of trustees, while from the question of dollars and cents alone, it is manifest that the cost of a special commissioner, necessarily at a high salary, and of the various deputies which he would have to have, will be infinitely greater than the expense of the present unpaid board. Not only do we believe it unwise to make such a radical change as this at the present time, but, also, we believe that it should be clearly demonstrated that such a change would be beneficial. This has yet to be done.

#### STATE QUOTAS OF BABIES TO BE SAVED DURING CHILDREN'S YEAR.

THE Children's Bureau of the United States Department of Labor announced on February 25 the number of lives each state is asked to save in the campaign to save 100,000 babies and young children during Children's Year, beginning April 6. Announcement of the purpose to

initiate such a movement was made some time ago by the Children's Bureau and the Child-Welfare Department of the Woman's Committee of the Council of National Defense, and the response, which has surpassed all expectations, indicates that efforts to promote the health and welfare of children are to be more vigorous this year than ever before.

The saving of 100,000 lives of children under five is only one part of the program for the welfare of 30,000,000 children under fifteen in this country. It is realized by all concerned that the standards of child protection must not be relaxed during war time, and the United States is expected to profit by the experience of other warring countries, where the importance of safeguarding childhood is emphasized as never before.

The movement to save 100,000 lives of babies and young children in the United States during the second year of the war is to be begun by a National Weighing and Measuring Test beginning April 6, the anniversary of the declaration of war by this country. In announcing the quotas the Children's Bureau said:

"In order that each State may feel responsible for a definite number of lives to be saved, quotas have been assigned to the various States, the apportionment being made on the basis of the population under five according to the 1910 census. This, of course, cannot take account of the varying death rates in the different States where death rates are known.

In about half the States of the Country, comprising nearly one-third the population, the registration of deaths was not sufficiently complete to warrant their inclusion in the registration area when the latest reports were published. The registration of births is seriously deficient in a still larger number of States. For that reason the apportionment of quotas of infant lives to be saved could not be made upon the basis of the infant mortality rate, which is based on the number of deaths under one year and the number of recorded births. Thus the only basis for the assignment of quotas uniformly applicable to all the States is the population as shown by the Federal census. As the effort for the hundred thousand lives applies to the specially hazardous period of life under five years of age, the quotas are calculated upon the basis of the population under five.

In making the apportionment on this basis it was realized that a high mark is thus set for

States in which the death rate among young children is already low. On the other hand, the mark set may be low for some States where the child death rate is excessively high. It does not appear to be possible to avoid some situations of this kind by any method of apportionment that could be devised with the data now at hand. If the registration of births and deaths were complete in all the States, an apportionment of quotas of the 100,000 lives to be saved by the various States could be made upon a different basis."

Plans for the celebration of Children's Year, of which the saving of 100,000 lives is one feature, are being developed by the Children's Bureau in coöperation with the Child-Welfare Department of the Woman's Committee of the Council of National Defense. The safeguarding and protection of children is looked upon as a patriotic duty in view of the unavoidable wastage of human life incident to war. It is expected that the 5000 or more local committees of the Child-Welfare Department of the Woman's Committee will be able to carry the campaign to every community in the United States. This is looked upon as essential to the success of the movement, for in the last analysis, every community must save its own babies if they are to be saved at all. State and Federal agencies, either official or voluntary, can make plans and offer suggestions, but each community must bear its full share of responsibility in making the campaign a success.

#### MEDICAL NOTES.

**THE BRATTLEBORO MUTUAL AID ASSOCIATION.**—The tenth annual report of the Brattleboro Mutual Aid Association for the year ended October 1, 1917, records that 167 maternity cases were cared for during the year. The maternity nurse made 365 prenatal visits. A clinic was held at the Association Home, where 41 children under five years of age were examined by the physicians and dentists of the town, each one giving his services for one hour or more. Those requiring attention were later visited by a nurse and advised as to their care. The great demand for trained attendants has impelled the Association to establish a school called the Thompson School for Training Attendants in Household Nursing. Women who enter this school are given a standardized training to work

for household nursing organizations under graduate nurse supervision. These attendants or household nurses supplement the work of the graduate nurse and take the place of the second when two are required. They also help to care for the children and the home when necessary during the mother's illness.

#### BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending Feb. 16, 1917, the number of deaths reported was 332, against 287 last year, with a rate of 22.07, against 19.37 last year. There were 45 deaths under one year of age, against 45 last year.

This number of cases of principal reportable diseases were: diphtheria, 76; scarlet fever, 32; measles, 176; whooping cough, 52; typhoid fever, 2; tuberculosis, 59.

Included in the above were the following cases of non-residents: diphtheria, 7; scarlet fever, 9; tuberculosis, 10.

Total deaths from these diseases were: diphtheria, 4; scarlet fever, 1; measles, 1; whooping cough, 2; typhoid fever, 1; tuberculosis, 22.

Included in the above were the following non-residents: diphtheria, 1; tuberculosis, 2.

**MEETING ON WAR SURGERY.**—A meeting of the Boston Medical Library in conjunction with the Suffolk District Medical Society was held in the Library on February 13, 1918. The general subject of the evening was War Surgery. The speakers were Col. Dercle of the French Mission and Maj. Edward Archibald of Montreal.

**SPRINGFIELD ACADEMY OF MEDICINE.**—The February meeting of the Springfield Academy of Medicine was held on February 12. Dr. William P. Graves of Boston spoke on "Ovarian Organotherapy." Dr. Smith began his course on "Circulatory Disease" on February 15.

**EFFECT OF COLD WEATHER ON DEATH RATES.**—The published figures of the Boston Board of Health show that for the month of January the death rate was not increased by the severe weather, but was better than usual. The rate was nearly 8% less than last year, and many of the communicable diseases showed a marked decrease.

"The only death statistics which show an increase for January are those for the babies. It

is generally believed that the cold and possibly the high prices of food are responsible.

The number of deaths of babies under one year in January, 1918, was 188, as compared with 167 in January, 1917. The month of December, 1917, however, showed only 162 deaths, as compared with 176 in December, 1916. The number of deaths of persons over 65, who usually suffer severely from cold, was 416 in January, 1918, against 502 in January, 1917. The total number of deaths in January of this year was 1264. Last January the figures were 1365.

INSANITY IN MASSACHUSETTS.—The annual report of the Massachusetts Commission on Mental Diseases for the year ended November 30, 1916, states that the whole number of mentally affected persons under its care October 1, 1916, was 18,718, being 1 such person to every 201 of the estimated population of the State. Of this number, 15,048, or 80%, were insane; 2885, or 15%, feeble-minded; and 670, or 3%, epileptic (sane). Their increase for the year was 581. The increase of such persons under public care for the year was 575; their average annual increase for the last five years, 591. The causes of insanity assigned by the physicians of the hospitals were physical in 2036, or 63.93%; mental in 132, or 4.14%; unknown in 997, or 31.30%; and not insane in 20, or .63%.

### Miscellany.

HENRY MAUDSLEY, M.D. LOND., F.R.C.P.  
LOND., LL.D. EDIN.

THE *Lancet* has recently published an extensive obituary notice of the late Dr. Henry Maudsley, one of the foremost thinkers and writers in the world on mental physiology and pathology, who died at Bushey Heath, on January 23, in his eighty-third year. The following extracts may serve to give an adequate idea of his life, activities, and contributions to science:

"The third son of the late Thomas Maudsley, Henry Maudsley was born at Rome, near Settle, Yorkshire, in 1835, and was educated at Giggleswick School and at University College, London. He graduated in 1856 M.B. of the University of London, winning the gold medal in surgery, and proceeded to the M.D. degree in

the following year. His early bias was in favour of surgery, but one of his first appointments was that of resident physician to the Manchester Royal Lunatic Hospital, which post he held from 1859 to 1862, so that his acquaintance with his special subject was literally as long as his long working life. In 1864, having come to London, he was appointed a physician to the West London Hospital, and thus obtained the chance of acquiring familiarity with general pathology. In 1869 (the year in which he was made a Fellow of the Royal College of Physicians of London) he became professor of medical jurisprudence at University College, a post which he held for ten years, when he resigned in order to concentrate entirely upon the responsibilities of a large and important practice as a psychiatrist.

His reputation grew as much, however, from his literary as from his practical work. As far back as 1862 he had been appointed editor of *Mental Science*, a journal which he ably conducted for nearly 20 years. His first original contribution to the literature, which he so enriched, of mental processes in health and disease, was comprised in his Goulstonian lectures on the 'Relations between Body and Mind, and between Mental and Other Diseases of the Nervous System'; these were delivered and published in 1870. In 1874 he wrote 'Responsibility in Mental Disease,' which has gone through five editions; in 1876, 'Physiology of Mind,' and in 1879, 'Pathology of Mind,' both of which have passed through two editions. In 1883 he published 'Body and Will,' and in 1887 'Natural Causes and Supernatural Seemings,' a wonderfully able book, whose materialistic views in certain places gave considerable shocks to the orthodox. In 1902 'Life in Mind and Conduct' appeared; in 1903, 'Studies of Organic and Human Nature'; and in 1908, 'Heredity, Variation and Genius.' His latest work, 'Organic to Human,' appealed mainly to the scientific student of psychology and sociology, whether without or within the ranks of the medical profession. It must indeed be considered chiefly as an important contribution to the still vexed controversy between the warring schools of 'materialists' or 'mechanists' on the one hand and of 'vitalists' or 'spiritualists' on the other. It fixes his place as a scientific thinker, for justly preëminent though he was as an authority on the subject of insanity, and much as his other work owes to his practical knowledge and experience in this special study, his most enduring title to fame will be that of the scientific philosopher who in his day and generation consistently and persistently upheld the principle of the unity of the human organism and its continuity with the rest of nature's processes. From his literary work alone he gained a wide reputation; he was an honorary member of the Medico-Psychological Society of Paris, of the Imperial Society of Physics, Vienna, and of the Medico-Legal Society of New

York, and his teachings received practical endorsement in all parts of the scientific world.

In February, 1908, Dr. Maudsley, who had done so much by his writings for the advancement of the study of psychiatry, made the munificent offer of £30,000 to the London County Council to provide a hospital for the early treatment of cases of acute mental disorder, whereat scientific research might be pursued and an educational institution provided for medical students. He had already communicated to Dr. F. W. Mott his intention, and Dr. Mott pointed out to him the desirability of associating such a hospital with the University of London and privately communicated this wish of Dr. Maudsley to the chairman of the Asylums Committee. Dr. Maudsley's generous proposal was made officially to Mr. H. P. Harris, then chairman of the London County Council, and in a letter to Mr. Harris, dated Feb. 14, 1908, he entered clearly into the motives behind his public beneficence. He said that as a physician who had been engaged in the study and treatment of mental diseases for more than half a century he had been deeply impressed with the necessity of a hospital whose main object should be the early treatment of cases of acute mental disorder, with the view, so far as possible, of obviating the necessity of sending them to the county asylums; the promotion of exact scientific research into the causes and pathology of insanity, with the hope that much may yet be done for its prevention and successful treatment; and the provision of an educational institution which should offer to medical students the opportunities of getting good clinical instruction in a class of diseases of which under existing conditions it is not easy for them to obtain a competent knowledge.

Dr. Maudsley's gift of £30,000, which had the inspiration we have just set out, having been accepted by the London County Council, a site was eventually found at Denmark Hill. On the outbreak of war the hospital was hastily completed, and is now used as a military hospital for the treatment of war psycho-neurosis, and whatever may be its future career, posterity will regard its originator as one who has done much to break down the artificial barriers which for so many decades separated mental from physical disease:

We close this notice of a remarkable man with a few words of personal reminiscence from Colonel Mott. He writes:

'I always much enjoyed my visits to Bushey Heath as I profited much by conversing with a man who was a broad-minded philosopher with a remarkable intellect and memory. In fact, he retained all these faculties to the very end. I conversed with him only the Sunday before he died. He took a great interest in the hospital which bears his name and which owes its existence to his great generosity. He was especially pleased when I told him that a number of American officers had been studying the psycho-neuroses under my direction. He showed a

special interest in my personal affairs. He told me that he did not wish to live any longer; at the same time, when I said the sun would shine again and I hoped he would live to see what had been done by the soldiers in making the gardens of the Maudsley Hospital fruitful, he brightened up. For he thoroughly agreed with me that employment was the best mode of treatment in convalescence of these cases. I often had propositions to make to him regarding the hospital and grounds, the pathological laboratory, and the research work carried on there, and he would criticize my remarks with much force and scientific acumen, partly, I think, to draw me out, partly it was his nature not to accept any statement without examination. In discussing general topics, such as politics and social problems, one learnt to respect greatly his shrewdness, wisdom, and knowledge of human nature and the motives of men. He used often to say to me, "You are an optimist," and I retorted, "You are a pessimist." When I got to know him intimately I found an extraordinarily kindly nature beneath what at first might appear to have been a satirical and cynical attitude towards mankind generally. This was no doubt due to the fact that he hated sham, humbug, and vainglorious people of all grades, religion and professions. His wife was the youngest daughter of John Conolly, of Hanwell, a great pioneer in lunacy reform. A few years ago he contributed a sum of money to commemorate Conolly's name at Hanwell. I think his wife, who was a very sweet woman, must have helped him with the idea of building a hospital. He told me that she was his "foolometer"; by that he meant he read over his MS. to her and confided in her his plans. Dr. Maudsley had the greatest mind of anybody that I have had opportunity of knowing intimately. His knowledge was not only profound and extensive, but accurate. He was a great Shakespearian scholar, and this is revealed in his writings; and he would quote passages not only from the Bible and Shakespeare, but from most of the great authors and poets, so that after dining and spending the evening with him, I would come away sometimes humbled, but always mentally refreshed. He had a remarkable knowledge of the works of the great philosophers, ancient and modern, and he frequently told me that he had a profound admiration for the philosophy of Spinoza. In his early days he was apprenticed to Clover at University College Hospital, and it was interesting to hear his opinion of the members of the staff of the hospital in his time. He was a good bowls player, and later in life he attended Lord's cricket ground pretty regularly, and I was surprised when I first met him to find this great philosopher knew far more about the style of play, the capacity for run-getting and bowling of well-known cricketers than I did. It is said that as a student he never seemed to work, and yet he carried off all the prizes at University College Hospital.'

## RETIREMENT OF GENERAL KEOGH.

THE British War Office has recently issued a communication announcing the retirement of Surgeon-General Sir Alfred Keogh from the position of Director-General of the British Army Medical Service:

"It is with great regret that the Secretary of State for War has decided that the time has come when Surgeon-General Sir Alfred Keogh, G.C.B., M.D., F.R.C.P., Director-General of Army Medical Services, must be permitted to resume his duties as General Executive Officer to the Imperial College of Science and Technology, and he will be replaced at the War Office from March 1 next by Colonel T. H. J. C. Goodwin, C.M.G., D.S.O., Royal Army Medical Corps, until recently the Assistant Director of Medical Services to the British Recruiting Mission in America, who will be appointed Acting Director-General of Army Medical Services.

Sir Alfred Keogh's services were placed by the Governors of the Imperial College of Science and Technology at the disposal of the War Office at the beginning of the war, and although during the last three years they have on several occasions requested that he should return to his former duties, owing to the development of matters of great national urgency which are delayed by his absence, it has not hitherto been possible to spare him.

It is very largely due to Sir A. Keogh's intimate knowledge and grasp of all matters connected with the Army Medical Services and the medical profession generally that the medical needs of the army have been met to the fullest extent during the war, and he has been able to secure the assistance and advice of various committees of eminent consultants, which it is hoped will continue to be at the disposal of his successor."

Commenting on General Keogh's retirement and the appointment of his successor, the *British Medical Journal* writes in part as follows:

"Sir Alfred Keogh was born in 1857 and received his professional education at Queen's College, Cork, and Guy's Hospital, London. He took the degrees of M.D. and M.S. at the Royal University of Ireland in 1878. After holding the appointment of house-physician at the Brompton Consumption Hospital he entered the medical department of the army in 1879, coming out second of nearly seventy successful candidates. This was the first batch of officers commissioned under the Warrant of 1879. For a considerable time before that the discontent in the service had been so acute that there had been the greatest difficulty in getting suitable men to come forward. At Netley Sir Alfred Keogh won the Martin Memorial Gold Medal and the Herbert Prize, and passed out with the highest total of marks of all the candidates—army. In-

dian, and naval. His first tour of foreign service was in Bermuda, whence he proceeded to India. On his return he was on duty at the Royal Arsenal, Woolwich, for five years; during that period he gained a large surgical experience. On completion of this appointment in the beginning of 1894 he was sent to India, where he served in the Madras Presidency; later he was transferred to Barrackpore, near Calcutta, where he was in charge of the Military Hospital. He was also civil surgeon there, and in that capacity had large opportunities of ordinary professional work among the operatives in the factories and civilian population. He returned to England in 1899, and in November went to South Africa as Secretary and Registrar of No. 3 General Hospital, which was at Rondebosch, near Capetown, in the early part of the war. When Bloemfontein was taken hospital accommodation was required on the lines of communication, and Colonel Keogh was sent to Springfontein with half of No. 3 General Hospital, and while there he was for a short time principal medical officer of the lines of communication from Bloemfontein to Norval's Pont.

He was soon transferred to Pretoria to take charge of No. 2 General Hospital, which he raised to a high state of efficiency. In November, 1900, it had 1000 beds, and this number was maintained till the following March. He was also Senior Medical Officer of 'Howitzer Camp,' which included the Langman Hospital, and direction of the sanitation of the eastern outskirts of Pretoria. At the end of 1900 he contracted enteric fever, and was invalided home in February, 1901. He was mentioned in Lord Roberts's first dispatch, received the decoration of C.B., and was specially advanced from the lower to the higher rate of Lieutenant-Colonel.

When the reform of the Medical Service of the Army was undertaken, he was invited to join Mr. Brodrick's Reorganization Committee. His work as a member of that was of the highest value. He was appointed Deputy Director-General from January 1, 1902.

On January 1, 1905, he was appointed Director-General, and retained that office until 1910, when he was appointed Rector of the Imperial College of Science and Technology, South Kensington. During his first period of office as Director-General the medical service of the Territorial Force was organized, and the system of Territorial hospitals with staffs drawn from the civil hospitals in the various localities was brought into existence.

Sir Alfred Keogh retires from the office of D.G., A.M.S., leaving behind him the reputation of one of the greatest organizers and administrators the army has produced. It was not an accidental coincidence that he and Sir William Robertson received the G.C.B. on the same day about a year ago. When he took up the office for the second time, in October, 1914, he knew that he had undertaken a task beset with difficulties. He succeeded in carrying day after

day a burden of responsibility and labour which only a man of his energy, enthusiasm, and mental calibre could carry. He had to meet at once the medical needs—which then seemed immense—of the new armies of men who voluntarily responded to Kitchener's appeal. The response came in a manner redounding to the everlasting honour of the British medical profession. The response must have heartened Sir Alfred Keogh in those difficult early days after Antwerp and the first battle of Ypres. It would have been made whoever had been in his place, but it was made more readily and with more confidence because he was there. Men at such moments do not stop to analyze the springs of their conduct, but there can be little doubt that the spontaneity of the response was in part due to the feeling that Sir Alfred Keogh was one of us; that through his long years of military administration he had never forgotten that he was a doctor first and a soldier afterwards. He has said this or something like it very often, and his record in the service would stand as evidence had he never said it. The work of the enlarged Army Medical Service, of which he has had the central direction, has been greatly successful in the prevention of disease, in the treatment of the wounded and sick, and in their transport and hospitalization. The first urgent problem of the war on the Western front was raised by the frequency of wound infections of extraordinary severity and of types which, if not new, were unknown except by name to modern surgeons. Then appeared at once the wisdom of the appointment of consulting surgeons, physicians, and pathologists, and the establishment of clinical and research laboratories under the direction of skilled men of the younger school. In all this Sir Alfred Keogh has shown a quality which distinguishes a great from a good administrator, a quality which he shares with his distinguished colleague in France, Sir Arthur Sloggett, of encouraging men of capacity, in the words of Harvey, 'ever to search out and study the secrets of nature' at the bedside or in the laboratory. In the course of his multifarious work of the last three and a half years Sir Alfred Keogh has had to touch the fates of ten thousand medical men of all ages, dispositions, and clinical acquirements. That the Army Medical Service has during these times always succeeded in using its civilian recruits to the best purpose would be to claim too much. It is not in mortals to avoid mistakes, but we are quite sure that throughout it all the retiring Director-General has been inspired by a real appreciation of the importance of scientific methods, by a genuine love of his profession, and a whole-hearted desire to do the best possible for the armies and for the sick and wounded. In choosing Sir Alfred Keogh's successor, the precedent recently created in other branches of the army, of looking to the younger men, has been followed. Colonel Goodwin, who entered the

R.A.M.C., in 1893, is not yet 47. He served with distinction in frontier expeditions in India and has won golden opinions in this war, where he served in France from the earliest stage, as more recently in America, to which country he proceeded as a member of Mr. Balfour's mission last spring. He has a difficult succession; we wish him every success in the high office to which he is called."

#### MEDICAL MATTERS IN MESOPOTAMIA.

THE *British Medical Journal* has recently published the following extract, relative to medical matters in Mesopotamia, from the last dispatch of the late Lieutenant-General Sir Stanley Maude:

"During the five months ending April there had been continuous fighting, and during that month the enemy was driven back on divergent lines with the capture of 3000 prisoners, 17 guns, and a considerable quantity of rolling stock and booty. All objectives had been secured, but the increasing heat rendered it necessary to redistribute the troops for the hot weather, and to make every possible provision to guard against the trying hot period approaching. The bulk of the troops were withdrawn into reserve and distributed in suitable camps along the river banks, where they could obtain the benefit of such breezes as blew, and where a liberal supply of water for drinking, bathing, and washing was obtainable. The heat was intense during the later part of June, in July, and at the beginning of August; consequently movements could not be undertaken by either side without grave risk of incurring substantial casualties from heat-stroke and heat exhaustion. The troops enjoyed a well-earned respite during the five months May to September. Sports, which are so essential to the well-being of the soldier, especially when temporarily inactive in a military sense, were freely indulged in, with beneficial results to the health and future fitness of the army for service in the field. Minor operations were, however, carried out during May, June, and July, and on July 8 Sinn El Zibban, on the Euphrates, was occupied. A further advance was interrupted by a blinding sand storm and a heat wave.

Active operations on the Euphrates were resumed on September 26, and Ramadie was entered on September 29, the Turkish commander and his staff being captured. During these operations the heat by day was considerable, and as they were conducted at some distance from the river they were only rendered possible by the excellence of the arrangements for water supply. The captures included 3454 prisoners, of whom 145 were officers, 13 guns, 12 machine guns, 2 armed launches, 2 barges, and large quantities of arms, ammunition, equipment, and stores. The dispatch contains the following ref-



erence to medical arrangements. Unfortunately, before it could be received Sir Stanley Maude had himself succumbed to cholera.

"The health of the troops during the summer months has been uniformly satisfactory, and many of the diseases from which we suffered in previous years—such as cholera, enteric fever, and scurvy—were either non-existent or negligible in their extent. This successful result was partly attributable to the untiring work of the officers employed in the bacteriological laboratories, without whose valuable assistance the difficulty of dealing with the epidemic diseases would have been considerably increased. But, although better conditions as regards accommodation and increased facilities for combating the heat resulted generally in a far lower sick-rate, an abnormal heat wave which swept over the area in July was responsible for a heavy casualty list. During this time the personnel of the medical services were severely taxed, but they resolutely and successfully responded to the calls made upon them. All ranks redoubled their exertions as the situation became more difficult, and the unremitting labours of the nursing sisters, many of whom suffered in health themselves, were worthy of the high record for devotion to duty which the nursing service has always maintained. The very practical assistance rendered by the British Red Cross Society and Order of St. John during this trying period was typical of the valuable services so consistently rendered by that organization."

#### A MEDICAL DRAMATIST.

A CORRESPONDENT of the *Lancet* has recently contributed to that publication the following communication relative to Dr. Michael Clancy, a little-known medical dramatist of the eighteenth century:

"In the scanty list of dramatists of the medical profession one seldom sees mention of Dr. Michael Clancy, who was born at Clare about 1700 and educated at Trinity College, Dublin, and who afterwards became a medical student at Bordeaux and graduated Doctor of Medicine at Rheims. He lived many years in Dublin, had a respectable practice and a good reputation, but lost his sight in 1737.

Being incapable of following his profession, he commenced to write for the stage, and in 1739 produced at the Smock Abbey Theatre in Dublin a tragedy entitled *Tamer, Prince of Nubia*. His next attempt was a comedy, called the *Sharps*, which was praised by Dean Swift. Another tragedy, called the *Extravagant Zealot*, was produced in 1746, and, according to the *London Advertiser*, was greatly applauded. This same year he staged *Tiresias*, the Blind Prophet in Dryden, and Lee's tragedy of *Œdipus*, and King George II granted him a premium of £40.

At the same time another medical dramatist, also an Irishman, had some vogue. Paul Hefernan was born in Dublin in 1719 and studied medicine in France, where he took the degree of Bachelor of Medicine, probably at Bordeaux. He was no brilliant success in the practice of medicine, but was concerned in a political paper called *The Tinkler*, written in opposition to the famous patriot, Dr. Charles Lucas. Garrick produced a farce of his called *The New Hippocrates* at Drury Lane in 1761, and a little piece called *The Lady's Choice* was brought out at Covent Garden in 1759. The celebrated Mrs. Abingdon produced his comedy of *National Prejudice* for her benefit in 1768. Garrick stood in some awe of him, but Croker says he had only very moderate ability, and a ready vein of scurrilous vulgarity. Some amusing and extraordinary anecdotes are related of him in the twenty-fifth volume of the *European Magazine*."

#### Correspondence.

##### VACCINATION CERTIFICATES.

The Massachusetts Medical Society,  
Office of the President,  
58 Pearl St., Worcester, Mass.,

Mr. Editor:— February 22, 1918.

The Committee on State and National Legislation approves of and has worked for House Bill No. 752 now before the Legislature, which will require a vaccination certificate from children attending private as well as public schools in the state, and which also provides that physicians who give certificates which state that a child ought not to be vaccinated on account of danger to its health must at least see the child so exempted from the law before signing such certificate.

The principle involved has received the endorsement in writing of the presidents of practically every college and university in the state, of the principals of the leading academies, of the Roman Catholic bishops of Springfield and Fall River, of His Eminence Cardinal O'Connell and of the State Board of Health. I ask that each member of the Massachusetts Medical Society constitute himself a committee of one to impress upon his senator and representative the importance of supporting this measure in the interest of the public health.

SAMUEL B. WOODWARD,  
President, Massachusetts Medical Society.

#### SOCIETY NOTICE.

NEW ENGLAND PEDIATRIC SOCIETY.—The fifty-second meeting of the New England Pediatric Society will be held at the Boston Medical Library, on Friday, March 8, 1918, at 8.15 P.M.

The following papers will be read:

1. Pyloric Stenosis. William E. Ladd, M.D., Boston.
2. Studies of Infant Feeding. X. The Digestion and Absorption of Fats. A. W. Bosworth, Boston.  
H. I. Bowditch, M.D., Boston.  
Louise A. Giblin.

From the Boston Floating Hospital Laboratories.

3. Extremes in Infant Feeding, The Present Tendencies. Fritz B. Talbot, M.D., Boston.
4. An Original Scheme for Demonstrating Infant Stools. J. I. Grover, M.D., Boston.

Light refreshments will be served after the meeting.  
CHARLES HUNTER DUNN, M.D., President.  
RICHARD M. SMITH, M.D., Secretary.



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**Session 1918-1919.** Candidates are required to present evidence of the completion of two years of collegiate work toward a Bachelor's degree in a college recognized by the New York State Department of Education. This two years of college work must include at least one year of college work in Chemistry, Physics, Biology, English and either French or German.

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**Session 1917-1918 begins Wednesday, September 26, 1917**

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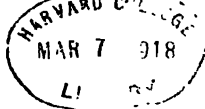
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## CONTENTS

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STATE DEPARTMENT OF HEALTH DRUG BILL.

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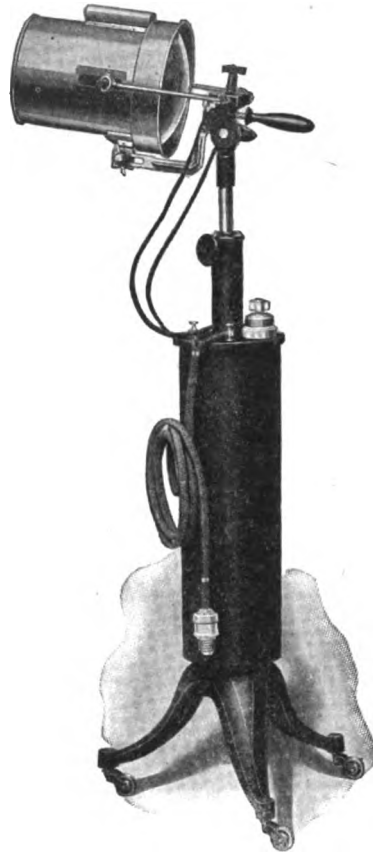
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HORNER (*Jour. Amer. Med. Asso.*, Dec. 8, 1917) states that the fractional test meal satisfies the clinician as to the amount and character of the fasting content, the gastric response, the acidity, the amount and character of secretion, the degree of gastric digestion, the presence of blood, and the amount of bile, and the pain at any specific point in the gastric cycle, which is of considerable diagnostic value.

Certain fairly constant characteristics of the curve are noted in various diseases. In gall-bladder disease the secretory response is prompt with high acidity, and the emptying time occurs at or near the high point. In duodenal ulcer there is a prompt gastric response, high acidity and delayed emptying time. In gastric ulcer, not affecting the pylorus, there is a weak and delayed response, moderate acidity and early emptying time. Gastric carcinoma presents two types of curve, the first showing the presence of acid and a delayed emptying time, and the second showing the absence of acid and an early emptying time. Pernicious anemia shows an anacid curve and an early emptying time, while severe secondary anemia shows a definite secretory response and a delayed emptying time. Chronic focal infections may show anacid curves suggesting the gastro-intestinal tract as a possible atrium of infection. [E. H. R.]

#### THE TREATMENT OF SOME CASES OF SO-CALLED "PERNICIOUS" ANEMIA.

(A Regimen That Has Been Found Helpful.)

BARKER AND SPRUNT (*Jour. Amer. Med. Asso.*, Dec. 8, 1917), in an exceptionally clear, concise, and well-presented article, describe the regimen in the type of anemias of the so-called pernicious group in which no definite etiology is discernible. The course is, in brief, as follows: Private room in hospital, complete rest, even excluding visits or letters from friends or relatives, special nurse, search for focal infections, in teeth, sinuses, throat, gastro-intestinal tract, genito-urinary tract, surgical treatment if necessary, careful dietetic treatment, fresh air, massage, graduated exercise, or possibly transfusion and splenectomy. The authors find that focal infections in the mouth are the most common etiologic factors so far demonstrated in this type of disease. [E. H. R.]

### SURGERY.

#### POINTS ON NITROUS OXIDE.

MCGAHEY (*Medical Record*, Nov. 8, 1917) mentions the following important points in regard to the administration of this anesthetic. A patient should never be allowed to become cyanotic, even to the

(Continued on page vi.)



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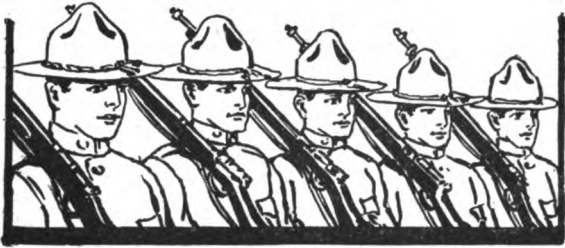
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(Continued from page 10.)

slightest degree, for if this takes place over any length of time, acidosis is produced and subsequent vomiting. For the very old, nitrous oxide is particularly valuable as it reduces materially the danger of post-operative pneumonia. Necessity of catheterization is rare when nitrous oxide is used. Patients with high blood pressure can take nitrous oxide safely, and the danger attendant upon the struggling and excitement of ether is avoided. The patient starts his recovery immediately after the anesthetic is removed and without the encumbrance of impaired kidney, heart or lung function. [E. H. R.]

### OPERATIVE TREATMENT OF TUBERCULOSIS OF THE KNEE JOINT IN ADULTS.

OSGOOD AND BULL (*Jour. Amer. Med. Assn.*, Oct. 6, 1917) summarize their conclusion by stating that tuberculosis of the knee in adults is not fully cured without operative treatment. Primary synovial tuberculosis of the knee in adults exists and is frequently improved or cured by inflation of the joint with iodoform oil. They have seen no permanent satisfactory function restored in cases with bone involvement. Excision of the knee is the method of choice in cases with bone involvement. The position of choice is from 15 to 20 degrees flexion for ambulatory vocations, and from 35 to 40 degrees flexion for sedentary occupations. Bone plates, where the bone is firm, and the kangaroo tendon "bundle tie" for conditions in which there is much atrophy, are valuable means of internal fixation. [E. H. R.]

### THE ACUTE ABDOMEN.

DEAVER, (*Med. Rec.*, Jan. 12, 1918) in a very excellently presented and concise article,—a review,—but one full of condensed information, covers this subject very thoroughly in a short paper. The article is not subject to abstracting, but is well worth reading as a means of refreshing one's mind on this subject, and of having certain important points emphasized. [E. H. R.]

### THE USE OF THE TURBINALS AND THE SEPTUM IN THE REPAIR OF INJURIES AND DEFECTS OF THE WALL OF THE NASAL CAVITY.

HETT (*The Lancet*, Dec. 15, 1917), in an article with many illustrations describes his methods of using the turbinate bones in the repair of nasal injuries, and comes to the following conclusions:

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(Continued on page viii.)



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(Continued from page vi.)

### SOME SURGICAL DEVELOPMENTS IN WOUND TREATMENT DURING THE WAR.

MAYO-ROBSON (*British Medical Journal*, Jan. 5, 1918) discusses certain changes of development in the treatment of wounds, brought about by the needs of the present war. Among these he discusses:

1. Asepsis.
2. The treatment of septic wounds on general principles: free incision, removal of foreign bodies, thorough irrigation with or without antiseptics, and free drainage.
3. Antisepsis and its modifications, such as the use of alcohol alone, no water or watery solution coming near the wound, the use of more or less poisonous antiseptics, the Carrel-Dakin treatment—the continuous use of a solution of sodium hypochlorite, the antiseptic pastes.
4. Physiological treatment of wounds, using hypertonic salt solution or the salt pack.
5. Surgical treatment—complete excision of the wound, including all contaminated parts and foreign bodies.
6. Bacteriological treatment,—that is, the introduction of a beneficent organism to kill the malignant germs.

He discusses these various methods of treatment in considerable detail. [J. B. H.]

### A STUDY OF FIFTY CASES TREATED BY FLAVINE.

BASHFORD, HARTLEY, AND MORRISON (*British Medical Journal*, Dec. 29, 1917) report on 50 cases treated by flavine, showing the advantage, and particularly the disadvantage, of this much discussed preparation. The flavine treatment of wounds, in their opinion, is associated with:

1. Small formation of pus.
2. Slow epithelial ingrowth.
3. Delay in all the processes of repair.
4. Lingering of organisms on the wound surface.
5. Some diminution in the local and general reaction to infection.

[J. B. H.]

### ANALYSIS OF 102 CONSECUTIVE CASES OF TETANUS.

COOPER (*The Lancet*, December 22, 1917) analyzes 102 consecutive cases of tetanus treated during the past two years. Of these cases 27 died within a few hours after admission. Of the remaining 75 cases, 42 recovered and 31 died. He gives 30 to 40 cc. 5% chloral hydrate intravenously until a sound sleep is produced. Antitetanic serum, 3000 units or more intravenously daily until the spasms have stopped. Chloral hydrate intravenously and chloretone per rectum are given daily until contraindicated. When they produce detrimental effects on the heart, or the heart sounds become feeble or the patient becomes very low, they are completely omitted, and the mixture is changed to one of ammonium bromide, caffeine, citrates, etc. [J. B. H.]

### FIFTH ANALYSIS OF CASES OF TETANUS TREATED IN HOME MILITARY HOSPITALS.

BRUCE (*The Lancet*, December, 1917) discusses the progress which has been made in handling the tetanus problem in wounded soldiers. The results are presented in tabular form, which he summarizes as follows:

In the 100 cases of tetanus under review the mortality was only 19%.

The incubation period tends to become longer, due to the prophylactic injection. Hence there are only 10 cases reported with an incubation of 10 days or under.

(Continued on page x.)

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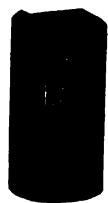
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(Continued from page viii.)

Only 14 cases are reported to have received secondary prophylactic injections of antitetanic serum in home hospitals.

In regard to the therapeutic effect of antitoxic serum, the evidence is still inconclusive. [J. B. H.]

### CLINICAL OBSERVATIONS ON THE HEMOGLOBIN AFTER OPERATION.

DUNN and WYNNE (*Bulletin of the Johns Hopkins Hospital*, January, 1918) discuss the variation of hemoglobin before and after operations of various types. Their conclusions are as follows:

The hemoglobin readings shortly after operation show very little change when compared with readings made before operation, even in cases of severe hemorrhage. The immediate post-operative reading often shows some increase over the preoperative reading.

The lowest point of the hemoglobin curve is found usually from 30 to 60 hours after operation (a difference of less than 5% is not considered).

The greatest drop in hemoglobin is usually during the first 24 to 36 hours, and is most rapid when salt solution infusions have been given.

In the series showing only a slight loss of blood at operation, the hemoglobin readings are usually higher during the first 12 hours than those made before operation, and there is very little post-operative decrease at any time.

There is an elaborate table giving the details of their cases. [J. B. H.]

### TREATMENT OF WOUNDS INVOLVING THE MUCOUS MEMBRANE OF THE MOUTH AND NOSE.

COLE (*The Lancet*, Jan. 5, 1918) in an article profusely illustrated and showing remarkable results, discusses the treatment of certain wounds of the mouth and face. He sums up the important points of this subject as follows:

1. That the result in any given case is largely influenced by the initial treatment adopted.

2. That the whole plan of treatment should be the joint evolution of surgeon and dentist working in concert to attain a common aim.

3. That open-bite splints should invariably be used in the type of case considered.

4. That the method known as "bringing the parts together" should frankly be recognized as unsatisfactory and be abandoned.

5. That skin is an admirable substitute for mucous membrane in that its texture is suitable and its extent unlimited.

6. That radiations may render the plastic surgeon such valuable assistance that facilities for treatment by this method should be provided in the case of any jaw centre or hospital. [J. B. H.]

### URETERAL STRICTURE: REPORT OF 100 CASES.

HUNNER (*Bulletin of the Johns Hopkins Hospital*, January, 1918) reports on 100 cases of stricture of the ureter. The article is profusely illustrated with 36 excellent x-ray plates. He describes the methods which he has used in taking pyeloureterograms.

In the differential diagnosis of this condition he discusses the diagnosis of stricture of the ureter from tuberculosis. This he considers a most difficult and most important distinction to make. He then discusses the treatment that he has employed. [J. B. H.]

(Continued on page xii.)

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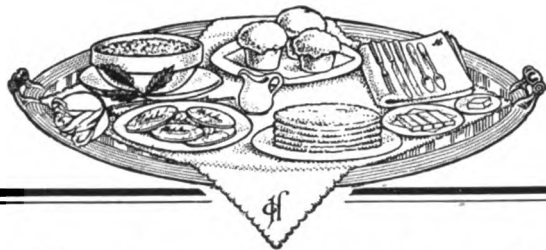
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(Continued from page 2.)

### NASAL RECONSTRUCTION.

AYMARD (*The Lancet*, Dec. 15, 1917) describes the principle of nasal reconstruction, the method of providing some supporting framework for the flaps taken from the forehead and elsewhere, the preliminary treatment of the patient, and other details. He presents photographs of the results of treatment, showing the remarkable work that can be accomplished with patience and skill along this line.

[J. B. H.]

### PATHOLOGY, PHARMACOLOGY AND PHYSIOLOGY.

#### THE COMPARATIVE VALUE OF THE WASSERMANN, THE COLLOIDAL GOLD AND OTHER SPINAL FLUID TESTS: A STUDY OF 203 CASES.

HAMMES (*Amer. Jour. Med. Sci.*, Nov., 1917) states that the most constant finding in a pathological spinal fluid is a positive globulin. It is indicative of an inflammatory process, but is of no specific import. Pathological cerebrospinal fluids usually show some lymphocytosis. As an index of pathological change in the cerebrospinal fluid the colloidal gold reaction is more delicate than any other test employed. Normal spinal fluid usually causes no reduction—and a slight reduction may occur in any of the dilutions in normal fluids. Cases of tabes and cerebrospinal lues give a typical colloidal gold curve in the luetic zone. In paresis the gold test is sufficiently frequent and characteristic to warrant the term "paretic curve" and is of great diagnostic value. In spinal fluids with normal findings, except a paretic colloidal gold curve in doubtful cases, the possibility of a multiple sclerosis must be strongly considered. The colloidal gold test is more delicate than the Wassermann test.

[E. H. R.]

### NEUROLOGY AND PSYCHIATRY.

#### MENTAL WAR CRIPPLES.

SAVAGE (*The Practitioner*, January, 1918) discusses the future treatment and disposal of what he believes will constitute a large number of men suffering from shell shock or from some other condition (organic or functional) of the brain, as a result of the present war. He believes that colonies in the country will be the most satisfactory solution of this particular problem. He does not go into the details of the management of such a colony.

[J. B. H.]

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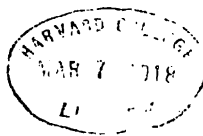
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## TABLE OF CONTENTS

March 7, 1918

ADDRESSES		EDITORIALS	
SOME ASPECTS OF FORENSIC PSYCHIATRY. <i>By J. W. Courtney, M.D., Boston</i> .....	818	ADVANCED RANK FOR MEDICAL OFFICERS. ....	333
THE TREATMENT OF ANTHRAX WITH NORMAL (BEEF) SERUM. REVIEW OF THE LITERATURE WITH REPORT OF A CASE. (STUDIES IN SERUM THERAPY VII.) <i>By Clarence H. Hyman, M.D., Boston, and Timothy Leary, M.D., Boston</i> .....	818	VOLUNTEER MEDICAL SERVICE CORPS. ....	334
ORIGINAL ARTICLES		STATE DEPARTMENT OF HEALTH DRUG BILL. ....	335
THE DIAGNOSIS OF THE CONDITIONS CAUSING PAINFUL AND IRRITABLE BACKS. <i>By James Warren Sever, M.D., Boston</i> ....	823	ANNUAL REPORT OF THE SURGEON-GENERAL, U. S. NAVY, 1917. ....	335
CLINICAL DEPARTMENT		THE NEW HEALTH COMMISSIONER OF MASSACHUSETTS. ....	336
A CASE OF CEREBROSPINAL MENINGITIS SUCCESSFULLY TREATED BY INTRASPINAL AND INTRAVENTRICULAR ADMINISTRATION OF ANTI-MENINGITIS SERUM. <i>By Theodore A. Hoch, M.D., Waverley, Mass.</i> .....	827	MEDICAL NOTES. ....	337
BOOK REVIEWS		OBITUARY	
Venesection. <i>By Walton Forrest Dutton, M.D.</i> .....	832	HARRY MADISON CUTTS, M.D. ....	338
		CORRESPONDENCE	
		THE TREATMENT OF PNEUMONIA. <i>Beverley Robinson, M.D.</i> ..	346
		MISCELLANY	
		REHABILITATION OF DISABLED SOLDIERS AND SAILORS. ....	339
		VENEREAL DISEASE AS A MENACE TO THE NATION. ....	341
		TETANUS IN BRITISH HOME MILITARY HOSPITALS. ....	342
		AMERICAN HOSPITALS AND SURGEONS IN FRANCE. ....	344
		RED CROSS WORK WITH THE UNITED STATES ARMY. ....	345
		MEDICAL MATTERS IN PALESTINE. ....	346
		NOTICES, RECENT DEATHS, ETC. ....	346

## Addresses.

### SOME ASPECTS OF FORENSIC PSYCHIATRY.\*

BY J. W. COURTNEY, M.D., BOSTON.

THE accumulated literature of psychiatric medicine has, in our day, reached such enormous proportions that with it one might easily wall about a fair-sized city. In text-book, monograph and periodical, the every word and deed of individuals whose speech and conduct betray the insane character of their mental operations, has been studied from every conceivable viewpoint with such meticulous profundity that the medical man of merely average powers of application is overawed by the evidence of the almost superhuman industry and apparently boundless leisure which have made such studies possible.

It is no part of the purpose of this paper to attempt to estimate to what extent much of this deep research makes possible the fundamental aim of every true physician—the restoration of his mentally sick patients—or to enter upon a discussion of the proper designation for such groups of insane phenomena as tend, with signal frequency, to coalesce clinically. Each of you has, I am sure, his own well-formed opinion on the first point. The second is of no interest whatsoever outside the purely academic.

Some of us, to be sure, are inclined to view with regret a growing mania on the part of certain present-day psychiatrists to obscure rather than clarify our conception of mental disorder by the attempted establishment of unnecessarily fine clinical distinctions, and by the bestowal upon these distinctions of bastard terms of Anglo-Germanic and Greco-Latin parentage. In spite of this misdirected enterprise, however, the fundamental facts concerning insanity are the same today as they were at the inception of mental medicine, and the lunatic of our own times reacts to his disease in a manner identical with that of the lunatic of centuries ago. Hence, it follows that, for those of us who possess the proper equipment of historical knowledge and sound clinical experience, and who put to the best and fullest use our faculties of observation and logical induction and deduction, there should be but little difficulty in determining, to the satisfaction of the community at large, whether a given act which has brought an individual into conflict with the law, is the act of a sane and responsible person or of one who, according to the standards of sound science and common sense, may properly be adjudged insane and irresponsible. This is particularly true with regard to those individuals who are guilty of acts of violence or of actual homicide—at least this is the thesis I shall endeavor to uphold.

Even the mere tyro in psychiatry knows that in certain types of mental disorder the patient is strongly impelled by his delusions and hallucinations to harm those who are unfortunate enough to excite his insane displeasure. On

\* Paper read by invitation before the Rhode Island Medico-Legal Society, at its Quarterly Meeting held at the Rhode Island Medical Library, January 31, 1918.

the other hand, singularly few physicians appear to realize that in the great sum-total of insane throughout this country the percentage of violent or homicidal patients is not merely relatively but absolutely small. It is, nevertheless, the fact, and one whose significance should never be ignored in arriving at our opinion with regard to the mental status and responsibility of a given homicide.

It may, I believe, be safely stated that all the homicidal insane belong in some one of the following clinical groups—1° acute mania; 2° the maniacal phase of maniac-depressive insanity and of the psychoses which bear the questionable label—"involutional"; 3° paranoia, and the paranoid form of dementia precox; 4° feeble-mindedness; 5° the epileptic psychoses; 6° dementia paralytica.

Concerning all these forms of insanity the available clinical data are, through the efforts of certain broadly-experienced and well-balanced men among successive generations of alienists, the best-established and most dependable in psychiatry. From such data we obtain pictures of the various types of homicidal lunatics, which are vivid and comprehensive; and the more closely we are guided by them in judging of the mentality and responsibility of an alleged insane murderer, the more thoroughly we will satisfy the combined demands of justice and science.

To reproduce these clinical pictures does not fall within the scope of this paper, but from them the following paramount conclusions may be drawn—1° that in a given case, murder is never either the first or the only evidence of insanity; 2° that the genuinely insane homicide's act is always either entirely motiveless or is executed for motives which clearly attest, to the satisfaction of even a layman, the unbalanced character of the murderer; 3° that in the maniacal frenzies—and these furnish by far the largest quota of homicides—there is never any deliberate selection of the victim or victims; 4° that the next largest quota of insane homicides is found among the paranoiacs and the paranoid precocious demented, and that their victims are practically always deliberately chosen from the ranks of those who are prominent or quasi-prominent in public life, the choice being made on the ground that such people are the principals in a relentless system of persecution; 5° that the murderous instincts of the feeble-minded most commonly lead to infanticide, and that their motives are either indeterminable or have for background some sexual perversion; 6° that the epileptic murderer invariably springs from the habitual criminal class; 7° and lastly, that the paralytic demented is the rarest among insane homicides and exhibits homicidal tendencies only when, actively possessed by the delusion that his physical strength is colossal, he desires to give noisy and destructive demonstration of it, and is prevented from so doing by his attendants.

In view of what precedes, I will at this point venture the statement that here in America but few homicidal lunatics, not excepting even the astute and wily paranoiac and paranoid types, are allowed to enjoy for long a personal liberty which enables them to carry out their murderous designs upon society. And with equal positiveness, I will add, that in no case in which murder is the act of a genuinely insane person, is the perpetrator of the crime compelled to stand trial for his or her life before the bar of justice.

How comes it, then, if what has just been said is true, that at disturbingly frequent intervals the columns of our press are filled with reports of the testimony of learned alienists in murder trials? This is a question whose answer involves matters almost as broad in their scope as those which lead to the overthrow of a monarchical form of government. Nevertheless, I shall endeavor to answer it, and I trust that you will bear with me if, in this attempt, I appear to be guilty of the unpardonable crime of discursiveness.

In the main the answer concerns the psychology of certain types of alienists—a matter of far greater interest and concern to the profession and public than the psychology of a given alleged insane homicide. From personal observation and from a close study of the transcript of the medical testimony in a number of murder trials in which the defense has been insanity, I have been able to identify and group the following distinctive types among psychiatric witnesses—1° the naïf; 2° the propagandist of the ultra-scientific and 3° the echolalic.

Not the least noteworthy fact about these three types is that they are invariably found on the side of the defense in a given murder trial. No less noteworthy, furthermore, is the additional fact that such a trial is invariably sensational—it is perfectly logical that it should be. Public excitement is naturally aroused when, by their utter failure to agree, men supposedly honest and supposedly equally well versed in mental science make it possible for twelve laymen to become the arbiters of the sanity and responsibility of an individual who has taken another's life.

In this connection, permit me to call your attention to the signal infrequency with which this curious duty devolves upon jurors when proletariat murders proletariat. This, as you perfectly well know, is not because the problem of sanity and responsibility does not arise in such cases, but for the simple reason that the task of its solution devolves, as it should, upon medical men of conscience, sound judgment and ripe experience, unhampered in the performance of this solemn duty by the distracting interventions of legal counsel and the co-deliberation of sophomoric and unwelcome confrères. And be it here said in tribute to the honor and sagacity of those physicians who undertake this most responsible of civic duties, that it is neg-

lightly seldom that their final judgment in a given case fails to lead to the most edifying administration of justice.

To return to the cases which afford the psychiatric expert an opportunity to air his views in court, we invariably find that the principals in the tragedy are socially prominent—whatever that may mean. The one certain thing it does mean, is that there is never a dearth of available funds with which to procure a galaxy of counsel—medical as well as legal—whose sole obvious purpose is to free a murderer from the heavy hand of the law.

When we examine critically the life histories of socially prominent homicides of either sex, we find that they are all cast in pretty much the same mould. The majority of both sexes first see the light of day in surroundings which denote an affluence unknown even to their most recent forbears—surroundings, furthermore, in which genuine cultivation and spirituality are conspicuous by their complete absence. In but few cases is there evidence of ancestral mental obliquity, either immediate or remote, that is worthy of a moment's consideration in its bearing on the sanity of the future homicide. More often than not the paternal parent is a shrewd, hard-headed man of affairs, whose sole preoccupation is to keep at least to the letter of the law in the prosecution of enterprises which tend daily to swell still further an already swollen fortune. In such a case the care of children is left entirely to the mother who, in turn, delegates this task, which would seriously hamper her social activities, to nurses and governesses.

Where family wealth is very recent and the product of paternal native shrewdness, tireless energy and self-denial, it is common for the author of this wealth to determine to give his sons and daughters the "advantages," as the expression goes, of which his life has been barren. Unfortunately, this determination is very apt to breed in the recipients of parental bounty not the traits of character that are an ornament to any period of life, but swinish self-indulgence, spineless dependence upon luxury of every sort, insufferable snobbishness, fondness for vulgar ostentation, aspiration to the meretricious glory of so-called social supremacy—in a word, everything which tends to catapult the devotee of the flesh-pots along the parabolic route which leads from shirt-sleeves to shirt-sleeves.

In certain cases the homicide to be is the only surviving child of a widow of abundant means. For the boy this too often means long years of close attachment to maternal apron-strings, of mollycoddling and character stunting. For the girl it means, with equal frequency, the same careful shielding from contact with the great horde of vulgarians who stand without her own particular social pale, and the exposure, through maternal complacency, to influences within, which are, potentially, at least, of far graver menace. The matter of health aside, the mother's

concern centers chiefly upon the daughter's social success, the crowning point of which is a marriage which will, in every way, satisfy the social standards of her little world. To this end the purse-strings are generously loosened and daughter is afforded a sort of continuous private view of life in which the pictures are largely rose-colored,—the frames of gold.

In America the finished product of this system of upbringing is, with notable exceptions, a young woman whose knowledge of the English language is, in most respects, inferior to that of the average Continental of her own sex and social position; whose practical acquaintance with foreign tongues would not avert for her starvation, if getting something to eat depended solely on her ability to converse in them; whose familiarity with old-world monuments is mainly acquired through the latter's proximity to the shops of well-known purveyors of feminine adornment; and whose lack of taste and discrimination in art, music and literature helps to foster the inane productions of knavish artists, of composers of modern musical jingles, and of a school of literature subversive of public and private morals.

A list of this same young woman's positive achievements is equally edifying. The art of self-adornment holds no secrets for her. She is rarely overdressed—quite the contrary. Indeed, on notable social occasions, what with the daring décolletage and the brevity and diaphany of her gown, there is little of her physical charm that is concealed from the eye of even the casual observer. Usually she is versed in all the amazing intricacies of the modern dance, in which she is ready to indulge on every possible occasion. Her genius for absorbing and retaining scandalous gossip would, in the old days, have landed her in the pillory. And her stock of conversational small-change is as unlimited as her feeling of boredom when any topic is introduced that smacks of the intellectual or "high-brow," as she is pleased to term it.

We do not need the assistance of a psychology pundit to enable us to discern in the product of these systems of upbringing the germ of tragedy, whose full fruition is, with too startling frequency, heralded in the public prints under the glaring headline "Society Woman Shoots and Kills Husband," or "Society Man Murders Wife." No more do we depend upon psychology or any other science to make clear to us how fate prepares the soil for this ghastly fruition. Her methods are both stereotyped and obvious.

I shall not attempt to set forth all these methods. A study of but two will serve my purpose. Let us begin with the evolution of the homicide who, in childhood, youth and, in certain cases, even in early manhood, has been sedulously isolated from his fellows by the mother solicitude. In such an individual the growth of character is early strangled by the

rank weeds of egotism, maternally fostered. The invigorating sap of altruism never permeates it. This egotism early manifests itself in the most sinister manner. Lack of attrition with the outside world, the incessant pampering of the body and the constant proximity of nurses and governesses all make for a precocious awakening of the animal instincts. By the time puberty is established the sexual appetite is already abnormal, and finds satisfaction in masturbation and in pervert acts or actual sexual intercourse with housemaids. Not so many years later there begins a surreptitious and tentative tippling. At first the family sideboard provides the means for this dangerous experiment which, toward the end of the individual's teens, is amplified at the bars of hotels where his summers are spent.

Of his intellectual activities but scant mention need be made. He must not be exposed to the health-menacing atmosphere of schools; hence, is tutored at home. He is not dull. He knows to a nicety the amount of his expected inheritance, the character of the maternal holdings and the extent of the annual revenue therefrom. Of banking and single-entry he is conversant with the rudiments. Satisfied with the possession of this knowledge, he concerns himself but desultorily with the more humanizing forms. Standard literature holds only the feeblest interest for him. Occasionally he beguiles the tedium of a railway journey or a stormy afternoon with the novel of the hour.

Small wonder, then, when death casts off forever the maternal apron-strings and the individual in question, now past his majority, is launched upon the world with an ample bank-account, that his sole aim in life should be the satisfaction of his organic longings. We will omit the unedifying details of his sordid and perverse course along the primrose path, up to the time of his marriage. Why he should legitimize his sexual relations with any female is not altogether intelligible. The most reasonable conjecture is that it is a matter of barter, that in the sexual repertory of the chosen woman there are refinements of erotic excitation and satisfaction beyond the compass of all others, and that these are procurable only by grant of legal access to the rake's pocket-book. Be this as it may, the marriage is consummated. Numerous pregnancies occur and are brought to abrupt termination through the illegal offices of venal practitioners. After a time the keen edge of the husband's sexual appetite grows dull, while his craving for alcohol waxes. During the years of his infatuation he has, parcel by parcel, ceded to his wife a goodly portion of his property. He openly curses himself for this folly, as he now terms it, and swears that he is at the end of it. At this change in his attitude the wife's true nature comes to the surface. She becomes the perfect shrew, jealous beyond expression and vituperative as a fish-wife. Quarrels and threats of violence come to be of

daily occurrence. The household servants are thoroughly cognizant of all this, but their silence is assured through various channels. Relatives and friends know nothing of the real situation, and public scandal is successfully averted until the inevitable happens and the bulletin boards and newspaper headlines flare forth the stereotyped "Society Man Murders Wife."

Directly the murder is committed, the husband summons the servants and tells them what he has done. Later he telephones a physician. This done, he sits about, head in hands, moaning and asking himself aloud why he did the deed. This indicates profound unconsciousness of his act. His memory defect is equally profound. He recalls nothing of the circumstances of the crime beyond the fact that there was a violent quarrel similar in all respects to scores of its predecessors, that oaths, villifying names and threats were exchanged, that his she-devil of a wife jumped and secured a revolver, that he snatched it, turned it quickly upon her and rapidly emptied the contents of four or five of its chambers, with the utmost accuracy of which he was capable, into her left chest, and, finally, that she crumpled and dropped in her tracks like a towel from a rack. This memory is, however, of only brief duration and is succeeded by a permanent *amnesia* that embraces every incriminating circumstance.

To the medical man without psychiatric experience there is absolutely nothing in the history of this case that even remotely suggests insanity and irresponsibility on the part of the murderer. From every point of view it seems to him as sordid and commonplace as any in the annals of crime. To the naïf type of alienist, however, it is quite capable of an entirely different interpretation. He cannot overlook the murderer's state of unconsciousness during which he informed the servants of what he had done, and summoned the doctor by telephone. Then, there is the profound *amnesia* by which the crime and the circumstances leading to it are completely obliterated from the slate of memory. These two important psychic phenomena weigh heavily in the diagnostic scale toward the side of epilepsy. The alienist institutes a patient search for other and equally weighty evidence and is finally rewarded. The daughter of the murderer's old nurse remembers distinctly of her mother's telling her that the boy was frequently carried from the yard into the house, feeling faint and complaining feebly but bitterly of pain in his stomach. His barber recalls that on several occasions when he went to the house to cut his hair, the boy appeared at times to pay no attention to what he, the barber, was saying.

Clearly the case is one of psychic epilepsy. Several of the naïf alienist's colleagues confirm the diagnosis and make the further discovery that the murderer is osteologically younger than his years, has asymmetry of the face, and a hypertrophied Darwinian tubercle of the left ear—

hence, is feeble-minded as well as epileptic. Surely, no person thus afflicted could possibly be responsible for murdering his wife. It would be at the same time a scientific error and a serious hardship for the homicide to be compelled to stand trial for his crime. Even the government's experts come finally to see the matter in this light. End result—the poor feeble-minded epileptic is in due course removed from the chilling shadow of the gallows to the solarium of a comfortable hospital for the insane.

Without present comment on what just precedes, let us see how fate fosters fruition of the germ of tragedy in the feminine product of the type of upbringing which I have been at length to describe. Here the picture is not so consistently drab. There is the usual brilliant début into society. The débutante is fêted, admired, flattered and courted. From this point on, marriage is her constant and absorbing preoccupation. Of the true meaning of this sacrament she is as guiltless as an unborn babe. Marriage to her merely connotes an establishment, a place in which to entertain in the lavish manner to which she is accustomed. Of suitors she has an embarrassment of choice. Heaven only knows what guides her selection, unless it be a feline sense of satisfaction at diverting the so-called heart interests of a certain man from some other woman—generally one of her dearest friends. Her marriage is as socially brilliant as her début. The groom is youthful as to years, but old in experience of the world, particularly of the feminine portion of it. He has taken his pleasures where he found them, and marriage promises to put only a temporary curb upon the firmly established habits of bachelorhood. Of the true inwardness of his nature she knows as little as he does of hers—and that is a negligible quantity.

Two or three gay years speed by. Then pregnancy occurs. The prospective mother loathes the physical discomfort of it all and chafes under the enforced interruption of her social activities. Also she takes irritated note of the fact that her plight, instead of increasing, diminishes her husband's devotion to her. On the other hand, towards the end of her pregnancy, his devotion to his clubs is conspicuous and adds tremendously to her irritation. The advent of the unwelcome baby in no way relieves the situation. In the next few years the husband's indifference grows to a marked extent, and he takes little pains to conceal it. He is back again under the thrall of his old and deeply-rooted bachelor habits.

It is needless to pass in detail over the stereotyped emotional phases which mark the reaction of the wife to the husband's treatment. As we all know, they are cumulative and, for him, sinister. For cogent reasons best known to herself, she refrains from seeking relief in the courts. Indeed, the removal of his presence through legal channels would not assuage the

deadly hatred of him that she now nourishes. Night and day she broods over the wrong he has done her. The one thing above all that goads her to desperation is the thought that she has been cast aside for another woman. And then one fine day, after months of incessant brooding, she lashes herself into the more than hellish fury of the woman scorned and with the fixed idea that, if she cannot have this man who is her legal husband, no other woman will, she shoots to kill.

Once the killing is an established fact, the woman that is in her again assumes the ascendancy. She experiences a revulsion of feeling which betrays itself in an hysterical crisis of utmost intensity. In this hour of torment freakish Nature denies her the safety-valve of tears, hence the bodily ravages occasioned by the tumultuousness of her pent-up emotions are widespread and terrible. Quickly she becomes hollow-eyed and pallid. Her flesh drops from her like a mantle. Appetite dwindles to the vanishing point; digestion is at a standstill. The acute hypotonicity of her vascular system betrays itself in palpitating heart and cold, clammy and mottled extremities. Not many days elapse before her trembling limbs refuse longer to bear her and she is forced to keep her bed, where she lies, a huddling, haunted figure—the perfect embodiment of the most abject misery.

Personally, I can discern nowhere in the operation of this woman's mind any faintest evidence that would lead me even to suspect that insanity and irresponsibility were the agents that prompted her to do murder. And yet, through the sworn testimony of alienistic propagandists of the ultra-scientific—or at least ostensibly through their testimony—she is acquitted on the ground that she was entirely irresponsible at the time of the homicide.

Probably you are quite as unable as I to discover upon what basis a diagnosis of irresponsibility is possible in this case. The secret of our inability lies in our ignorance of the ductless glands and their peculiar and subtle influence on the operations of the mind. To the ultra-scientific alienist the situation is as clear as crystal. He knows, from the clinical phenomena presented by the murderess *after* the crime, that she was, at the time of the murder, unquestionably the victim of hypothyroidism. He knows, furthermore, that this pathologic condition exerts a profound toxic influence upon the *unconscious* mind which, according to the authoritative word of the most eminent of present-day psychologists, is the directing center of all human action. Obviously, then, if the directing center of an individual's actions is profoundly poisoned by his glandular secretions, he cannot be held responsible in the eyes of the law for *anything* he may do. The logic of it all is irresistible.

Now comes the turn of the echolalic type of alienist. Consideration of him will be deservedly brief. He always figures with the

other two types, but is never a protagonist in the legal tragedy in which justice is immolated on the altar of pedantry. He is in the cast solely because, as astute counsel knows, juries count noses. His rôle is indicated by my designation of him. Having no independent opinion, he is the faithful echo of the opinions of his associates.

Those of you who have had the patience to follow my discourse with attention must have noticed that, here and there, it has betrayed faint outcroppings of sarcasm. Let me caution you that these were the result of temperamental peculiarities and were not primarily designed to excite mirth—far from it. The whole sorry business of psychiatric testimony in sensational murder trials is a subject for our most serious and thoughtful consideration. Curiously enough, there is an extraordinary parallelism between it and another form of testimony which has recently excited the just indignation of all true Americans. I refer to that of men high up in military circles in the trials of certain German spies. And with the belief that this parallelism will interest you, I venture to digress somewhat and quote the following paragraph from page 183 of the February number of the *North American Review*—"A naturalized German has been arrested for wilfully tampering with the machinery of torpedoes. He is charged with treason, the penalty for which, in time of war, is death. This man will be tried before a civil court, his ingenious lawyers will befog the minds of not over-intelligent jurors, the trial will be the same solemn farce that has made law a disgrace in this country, and the man who has forsworn his allegiance and betrayed his country to the enemy will, in all probability, escape by the payment of a fine, paid by the German Government, or a short term of imprisonment; if he has the luck of Captain Hans Tauscher, who offered to plead guilty to the charge of directing a conspiracy to blow up the Welland Canal, but was declared innocent because prominent army officers testified to his high character and social graces, a sentimental or corrupt jury will acquit him and he will go scot-free, with full liberty to be the means of sending American soldiers to their death."

Let us return, now, to our own affair and see what we can do to remove the stigma which at present very justly attaches to forensic psychiatry—a stigma with which, in reality, we are self-branded through the part we have so often played in aiding "sentimental or corrupt" juries to perpetrate a travesty on justice in the trial of capital crimes.

Enforced reforms through legislative intervention have, from time to time, been suggested by individuals or groups of individuals within our ranks, but, up to the present at least, their suggestions have evolved nothing practical. My own feeling in the matter is that legislative interference is quite unnecessary. The

means for wiping out the existing stigma and for self-rehabilitation are, and long have been, entirely within our grasp. As I have already maintained, the clinical data concerning the homicidally insane are among the best established and dependable of mental science, and constitute an acid test which should be applied without modification to every alleged insane murderer, whether he be proletariat or patrician. In this test such elements as sophistry and casuistry are conspicuous by their absence, and if its application were to become universal, we would cease to hear alienists, under oath, emit in court theories concerning mental disease, which are accepted as trustworthy scientific facts by jurors, but which would meet with nothing but contempt even in the humblest gathering of medical men.

## THE TREATMENT OF ANTHRAX WITH NORMAL (BEEF) SERUM. REVIEW OF THE LITERATURE WITH REPORT OF A CASE.\*

STUDIES IN SERUM THERAPY. VII.

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SCLAVO's<sup>1</sup> statistics show that in Italy, where anthrax is a notifiable disease, there were recorded in the eleven years, 1880 to 1890, 34,052 cases, with 5812, or 24.1%, deaths.

Legge,<sup>2</sup> in a tabulation of 248 English cases, shows the following mortality:

Upper lid, 46%;  
Head and face, 43.5%;  
Neck, 41.5%;  
Upper extremity, 12.5%;  
Lower extremity, 1.2%;  
Trunk, 1.2%.

Page<sup>3</sup> records statistics of 508 English cases with 139 deaths—a mortality of 27.3%.

That the mortality may vary in epidemics is indicated by a report in the Vienna correspondence of the *British Medical Journal*<sup>4</sup> of 13 persons infected by Russian hair, with 10 deaths, or 77%.

## THE TREATMENT OF EXTERNAL ANTHRAX.

Various methods have been used in the treatment of external anthrax. In large part, the practice of excision of the pustule, followed by the application of antiseptic agents, such as 5% carbolic acid, about the site of the lesion, has been carried out. Cauterization has been practised alone, using carbolic injections, caustic potash, or other agents, to provoke wide-

\* Read before the Boston Bacteriological Club, Feb. 9, 1918.



spread destruction of tissue and bacteria about the local lesion. The powdering of ipecac into the wound, following excision, together with its internal administration, has been the standard method at Guy's Hospital,<sup>5, 6</sup> the mortality following this procedure being very low. Müller<sup>7</sup> and Ramstedt<sup>8</sup> have successfully treated a series of cases by rest, fixation, elevation of the part and the local application of gray ointment. Becker<sup>9</sup> reports a limited use of salvarsan intravenously in the treatment of anthrax, with one death out of three cases treated.

Boston City Hospital Records for the 11 years, January 1, 1907, to January 1, 1918, show 26 cases of external anthrax treated by excision or expectantly (hot compresses), with a mortality of 8, or 31%. None of these cases furnished a positive blood culture. One case, which terminated fatally, received intramuscular injections of 95 cc. (divided doses) of anti-anthrax serum, beginning 48 hours before death. The cases treated expectantly, seven in number, all recovered. A similar result with expectant treatment has been observed at the Massachusetts General Hospital. The cases which developed a septicemia died. Those which did not develop a blood invasion recovered.

The modern conception of external anthrax is of a low-grade infection, which usually remains localized for long periods, and tends to get well under expectant treatment, except in certain situations, such as the eyelid. If invasion of the blood stream occurs, the mortality is 100%, under any other treatment than that by serum.

#### SERUM TREATMENT OF ANTHRAX.

The pioneer work in the prophylaxis of anthrax was carried out by Toussaint,<sup>10</sup> who heated the blood of animals dead of anthrax to 55° C. for 10 minutes, and then injected it into the animals he wished to protect. Although the blood was often crowded with bacteria, no harmful results followed, and the inoculated animals were later refractory to infection by virulent anthrax bacilli.

Pasteur, Chamberland and Roux<sup>11</sup> first practised the use of attenuated cultures of the anthrax bacillus as a prophylactic against naturally acquired anthrax. This represents the first use of a bacterial vaccine in medical history, and the first attempt to produce immunity by the use of an agent of known character.

The discovery by Richet and Héricourt<sup>12</sup> of the preventive properties of the serum of immunized animals, followed by the work of Behring on diphtheria antitoxin, and of Kitasato on tetanus antitoxin, led to investigation by many workers of the possibility of producing a similar anti-serum for the treatment of anthrax.

Efforts to obtain a soluble toxin from cultures of the anthrax bacillus were without avail, however, if we except the so-called toxin obtained by Marmier,<sup>13</sup> by growing the bacillus in

glycerinized peptone solution. This product, it is now agreed, is an endotoxin arising from autolysis of the organisms.

Marchoux<sup>14</sup> first produced experimentally an anti-anthrax serum, which was used effectively in curing animals experimentally inoculated. Selavo, working first with rams,<sup>15</sup> and later with the ass,<sup>16</sup> obtained the anti-anthrax serum, which has had the widest use in the treatment of human anthrax in Italy and England. Animals are immunized by the injection of attenuated cultures of the anthrax bacillus, followed by virulent cultures. In the treatment of infection, immune serum is introduced by intravenous or intramuscular injection, in doses of 10 to 50 cc. More recently, Selavo affirms that smaller doses than 60-80 cc. are useless (cited by Anthrax Investigation Board<sup>17</sup>).

Selavo<sup>18</sup> reviews the cases treated in Italy with his serum, and reports a mortality of 6.09% in 164 cases, as compared with a mortality of 24.1% in Italy under other methods of treatment.

Legge<sup>2</sup> reports 12 English cases treated by Selavo serum, with two deaths, one in a case comatose at the time of beginning treatment. He summarizes Selavo's claims for the treatment under these heads:

1. In very large doses it is innocuous.
2. It can be well borne, even when introduced into the veins.
3. No case taken in an early stage, or of moderate severity, is fatal if treated with serum.
4. With the serum, some cases are saved when the condition is most critical and prognosis almost hopeless.
5. When injected into the veins, the serum quickly arrests the extension of the edematous process, so as to reduce notably the danger from suffocation, which exists in many cases where the pustule is situated on the face or neck.
6. The serum, if used early enough, reduces to a minimum the destruction of tissue.
7. In some situations of the pustule, as the eyelid, serum must be used in preference to any other treatment.
8. Persons attacked, when treated with the serum, appear to become convalescent in the course of a few hours.
9. In internal anthrax, it is the only treatment which can hold out any hope.

Page's statistics<sup>3</sup> from English cases of anthrax treated with serum, show an apparent higher mortality than in untreated cases. In the earlier group these results were undoubtedly due to the use of too small doses (10, 20, and 30 cc.). The later results correspond more closely to those of Selavo, if we exclude cases in which serum was used *in extremis* and where death occurred within 24 hours after the exhibition of the serum. The early history of diphtheria antitoxin shows a similar apparent high mortality, due to the introduction of serum only as a last resort. Familiarity with the value

of the serum led to its earlier use and a change in the picture in recent years.

Mendez,<sup>18</sup> from the Institute of Experimental Hygiene in Buenos Aires, claims priority in the manufacture of an antitoxic serum against anthrax, and further claims that 3 cc. of the serum which he prepares will cure cases of external anthrax. Details are not furnished of the method of preparation, but he writes, "Sclavo in Italy has confirmed my findings and found literal proof." The presumption, therefore, is that Mendez' serum is produced by the method described by Sclavo. In 1073 cases treated by his serum the deaths were 44, or 4.19%. In cases which died, the serum was used in moribund individuals, or the death was due to edema of the glottis and the throat, to myocarditis and atheroma, or to alcoholism.

#### METHOD OF ACTION ON ANTI-ANTHRAX SERUM.\*

Sclavo, Burow, Jager and Becker have demonstrated that anti-anthrax serum is an efficient means of cure of even anthrax septicemia, in which the outlook by any other method of treatment is hopeless. All agree that, in this condition, the bacteria vanish rapidly from the blood stream under intravenous serum injections.

In spite of these remarkable effects, efforts to account for the action of the serum have led to contradictory and unsatisfactory results.

##### a. Bactericidal Activity?

Anthrax bacilli can be grown in diluted anti-anthrax serum, just as they can be cultivated in dilute normal serum. There are no differences, in this respect, between immune and normal sera.

Sobernheim and others have shown that various anti-anthrax sera have no more marked bacteriolytic powers than normal sera from the same species (sheep, cattle, horse, sheep and dog).

Anthrax bacilli exposed for hours in the thermostat and ice-chest to anti-sera, lose none of their virulence, and the serum loses none of its protective powers (Ascoli).

There is no evidence of bacteriolytic activity, even in the body, by Pfeiffer's test. Virulent organisms injected into the peritoneal cavities of immunized guinea pigs exhibit no greater granular change, and undergo no more frequent extracellular solution (lysis), than is shown in control animals which have received injections of normal serum with the bacteria, or, indeed, in controls which have received injections of bacteria alone.

Sobernheim tested many anti-anthrax sera from cattle, sheep and horses for complement-fixing activities, and obtained constantly negative results when germ-free extracts of the anthrax bacillus or anthrax edema fluids were used as antigens. Using suspensions of living bacteria, reactions were obtained with both im-

mune and normal sera. While the reactions with immune serum were measurably stronger than those obtained with normal serum, they were inconstant, many of the anti-anthrax sera exhibiting no reaction.

##### b. Agglutinating Properties?

The anthrax bacillus is non-motile, and has a tendency to group itself in masses. Distinct agglutination, however, may be had in high dilution with some anti-anthrax sera, but is inconstant and not dependable. No parallel can be found between agglutinating power and immunizing strength of sera. The presence or absence of agglutinating properties has no relation to the quality of the serum.

##### c. Precipitating Agencies?

As is the case with agglutinins, precipitins are found in some sera, but are inconstant and show no agreement with the protective properties of the serum.

##### d. Bacteriotropic Qualities?

Sobernheim could demonstrate no bacteriotropic properties in immune sera. Sclavo has shown that heating his serum to 55°C. for one hour does not affect in any way its power to confer protection on animals. Sobernheim found that heating to 60°C. did not destroy the protective powers of the serum. These temperatures would destroy opsonins present in the sera.

##### e. Antiblastic Power?

Under this heading Ascoli refers to the potential power of serum to prevent the normal development of the anthrax bacillus in the body, in particular with reference to the formation of capsules. Many authorities believe that there is a relation between capsule formation in the anthrax bacillus and its virulence. Although capsules do not appear in ordinary culture media, they may be formed in media containing fresh albumens, and are constantly formed on the organisms in the blood and tissues of infected animals.

With Preisz, Ascoli claims that the anthrax bacilli are destroyed so quickly in the immunized animal that the protective capsule of the bacillus cannot be formed. This phenomenon could not be shown in comparative tests of normal and immune serum *in vitro*, but a marked difference was observable in the bodies of normal and immune animals. It was, therefore, argued that, while the immune serum did not in itself possess the substances inhibiting capsule formation, it actuated their production in the body of the immunized animal.

Sobernheim has obtained cultures, virulent for susceptible animals, from the inoculation atrium in highly immunized animals, up to one week after massive injections; Metchnikoff up to 14 days, and Marchoux up to 70 days; so that the bacteria are not all killed quickly in immune animals. Moreover, immune animals

\* For references under this head consult Sobernheim, Kolle and Wassermann's Pathogenic Micro-organisms, 1913, III, 532.

are protected, even against the injection of capsulated organisms contained in the blood of animals dead of anthrax.

Preisz admits that capsules may be formed on anthrax bacilli (cultures) introduced into passively immune animals, and Sobernheim and Bail have found capsulated organisms in large numbers in highly actively immunized animals for some time after massive injections of anthrax cultures.

#### f. Stimulation of Phagocytosis?

Marchoux observed that the introduction of immune serum into normal animals was followed by a rise in temperature, which was slight and subsided quickly, and also by a fleeting leucocytosis. He, with others, believes that phagocytic activity is exhibited in greater degree in animals which have received immune serum than in those which have not.

Sobernheim could not confirm these observations with reference to phagocytic activity. He found that an increase of leucocytes follows the injection of blood serum, whether the serum be normal or immune, and could not observe any qualitative differences in this respect in the reaction of experimental animals.

Pettit, in 1901, demonstrated that injections of heated normal horse serum would be followed by a leucocytosis, and more recent work has shown that a rise in temperature, with a fleeting leucocytosis, will follow the introduction into the animal body of any foreign proteid.

We are left, then, with no tangible evidences of the presence of specific immune substances in anti-anthrax serum, although the clinical and experimental evidence of its powers to protect is beyond question. The only objection to its use is that the preparation and marketing of the serum seem to entail a high expense, the cost of the initial dose running as high as thirty dollars or more.<sup>19</sup>

#### THE USE OF NORMAL SERUM IN ANTHRAX.

The replacement of immune serum by normal serum in the treatment of anthrax is due largely to the activities of R. Kraus, formerly of Vienna, who came to Buenos Aires to accept the headship of the Bacteriological Institute of the National Department of Health of the Argentine Republic. Penna, Cuenca and Kraus<sup>20</sup> report the treatment of 50 cases of anthrax by normal beef serum, with no deaths. The serum was heated twice to 56° C. for one-half hour, in order to eliminate the toxic effect of beef serum. In a later paper<sup>21</sup> they report 90 additional cases, with one death.

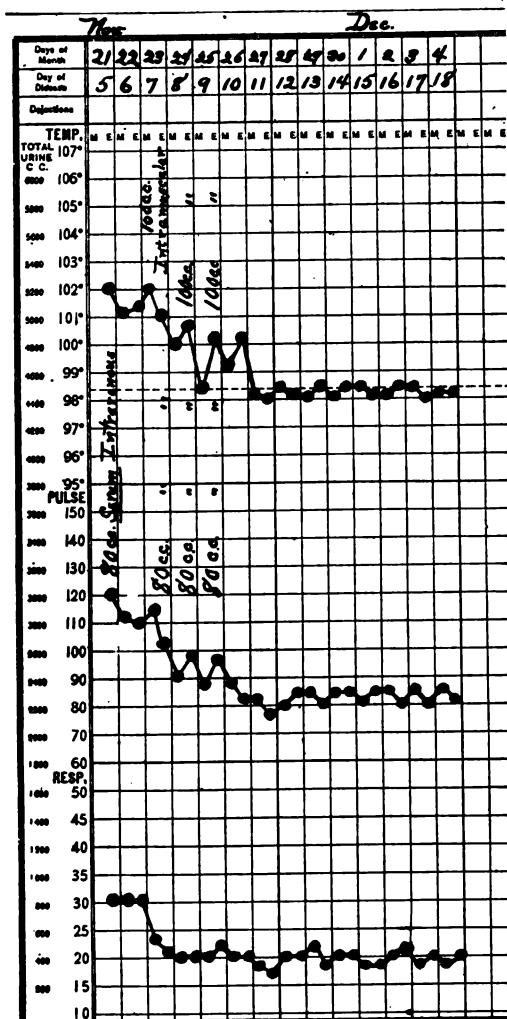
Solari<sup>22</sup> reports 6 cases treated with heated normal beef serum, with no deaths.

The mortality in these 146 cases was 0.68%.

Kraus claims that the new medication produces sensibly the same benefits, utilized intravenously or hypodermically, although obtaining without question a greater intensity of action when the serum is introduced directly into the



TREATMENT OF ANTHRAX WITH NORMAL (BEEF) SERUM.



vein. The results "exclude all doubt regarding the real and positive efficacy of this treatment in the cure of malignant pustule, and even of carbuncular septicemia. Hypodermic medication was sufficient in many cases, but in grave cases with intense symptoms, or accompanied by septicemia, the intravenous method is better and more sure, and requires no more care than is necessary in other intravenous medication."

*Dosage.* "Doses of 10, 20 or 30 cc. constitute the ordinary quantity for each injection, augmented to 40 and 50 cc. or more in more intense cases."

#### ANAPHYLACTIC RESPONSE.

"It is interesting to note that the therapeutic application of heated normal beef serum has produced no general or local disturbances comparable to those frequently produced by horse serum. This last produces in 10% or more of the cases treated, allergy or serum sickness. Nothing comparable has appeared following the use of normal beef serum. In only two cases have we seen a slight hyperemic zone, with little intensity and fugitive, surrounding the point of injection, and found commonly following the injection of even the most innocent solutions."

#### METHOD OF ACTION.

"The injections, whatever the via employed, lead to an immediate elevation of temperature with a descent in 24-48° to the normal. At the same time there is produced a favorable local reaction, characterized by diminution of the edema and a bettering of the general condition. In some cases the edema progresses and the fever continues until a new injection is made" (Kraus).

Lignieres,<sup>23</sup> who had supplied the commercial anti-anthrax serum used in the Argentine before the advent of normal serum therapy, entered into a bitter personal controversy with Kraus in the local journals and medical societies. He comments on the greater toxicity of beef serum in comparison with horse serum, even when heated, and denies that it possesses the properties against anthrax such as are manifested by any good specific serum from a horse immunized against anthrax.

In a later paper<sup>24</sup> he reports extensive experimental work, all apparently proving that Kraus has been misled in his statements as to the efficacy of normal serum. He argues that anthrax is prevalent in cattle; if their serum possessed any natural defensive properties, it would seem as if their serum would protect them against the disease.

In spite of Lignieres' strictures, Kraus and his co-workers continue to demonstrate the efficiency of heated normal beef serum in the treatment of anthrax.

#### PROBABLE METHOD OF ACTION.

The most rational explanation of the activity of normal beef serum in anthrax is that it ob-

tains results by provoking a non-specific proteid reaction. Kraus was one of the pioneers in the study of this phenomenon in Europe in the treatment of typhoid and other diseases. Foreign proteids introduced into the body give rise to a transient increase in temperature, accompanied by a leucocytosis, which is also fleeting. This reaction, which is in no way specific, has been shown to be capable of terminating a considerable percentage of cases of typhoid fever by crisis, and is now used widely in the treatment of low-grade infections, such as rheumatoid arthritis.

Foreign serum is, perhaps, the blandest agent which can be introduced into the body for the production of this reaction, and beef serum has the advantage over horse serum that it does not give rise to serum sickness, which did not appear in the series of Kraus, has not been seen by Dr. Edwin Place in a large series of human beings immunized prophylactically against diphtheria by the use of antitoxic beef serum, and has not arisen in the series of wound infections we have treated, although doses totalling 1350 cc. by intramuscular and intravenous injection were given in one case.

#### CONCLUSION.

In the discussion of the method of action of specific anti-anthrax serum it was made apparent that no satisfactory explanation could be offered of the mechanism which produces the results obtained, other than the excitation of phagocytic activity, and this is not a specific immune response, but will follow the introduction of any foreign proteid into the animal body.

Whatever in the way of immune substances may be present in specific anti-anthrax serum, the amount of these materials must be very small.

It is reasonable to conclude that specific anti-anthrax serum owes its efficacy in small part to specific immune substances, and in large part to a non-specific proteid reaction, obtainable by the use of other proteid substances as well. Of these substances, heated normal beef serum is, perhaps, the blandest and least objectionable.

The history of our case follows:

Nov. 21. The patient, a longshoreman, aged 51, admitted to the hospital. Five days ago there appeared a small sore on the right side of the face, and following this, there has developed very rapidly a marked swelling over the whole right side of the face. There has been severe pain. Patient too sick to give a history.

Examination showed a massive edema and infiltration of the whole right side of the face, extending from the temporal region well down the side of the neck, and posteriorly behind the ear. The right eye is completely closed because of swelling of the lids. The skin over the right side of the face is glistening and dark red in color. The left eye is also practically closed because of swelling of the lids and swelling about the left cheek.

Just lateral to the external canthus of the right

eye is a small circular area about the size of a dime, covered with a hard, dry and almost black crust. No vesicles. There is a dark discoloration about the upper and lower lids of the right eye, which cannot be opened because of the dense infiltration of the lids.

Patient is very restless and in a semi-conscious condition. Can be aroused, but takes no interest in what is going on about him. Temperature 102, pulse 120. Smear from lesion showed *B. anthracis* and a staphylococcus.

Patient seen by Dr. Hubbard, who gives little hope for recovery.

**Treatment.**—Hot poultices over right side of face. (1) 80 cc. of heated beef serum intravenously.

Nov. 23. There was no reaction following the injection of serum. Condition of patient remained practically the same as at entrance. (2) 80 cc. beef serum intravenously, and 100 cc. injected deep into lumbar muscles.

Nov. 24. No general or local reaction. Blood culture negative. (3) 80 cc. beef serum intravenously and 100 cc. into lumbar muscles.

Nov. 25. No general or local reaction. Patient appears much brighter. The swelling of the face is subsiding. (4) 80 cc. beef serum intravenously, and 100 cc. into lumbar muscles.

Nov. 26. About one hour following the last injection of serum, the patient had a chill, but with no marked rise in temperature. The left arm at the site of intravenous injections, is considerably swollen, reddened and tender. There has been a marked decrease in the swelling of the face and patient feels fairly comfortable. Still unable to open right eye.

Nov. 27. Temperature and pulse normal. Patient comfortable. Swelling and redness about left arm subsiding. Very little swelling about the face. Skin over the upper and lower lids of right eye is becoming gangrenous.

Nov. 29. Temperature and pulse normal. No inflammation about the left arm, and practically no swelling about the face. Upper and lower lids definitely gangrenous.

Dec. 3. Most of gangrenous skin and subcutaneous tissues trimmed away. Considerable amount of thick yellowish pus. Smear showed staphylococcus. Edges of the living skin are raised, reddened and rolled in, and a considerable amount of pus can be expressed from the undermined edges. Small area of apparently normal skin just above the palpebral border of the upper lid.

**Treatment.**—Irrigations with beef serum and wet beef serum dressings every four hours.

Dec. 7. Redness and fluctuation over zygomatic process. Small incision made over this area to allow better drainage and through-and-through irrigations with beef serum. There is a large amount of thick pus.

Dec. 11. Practically no pus. Base of ulceration is clean and covered with healthy-appearing granulations. There is a beginning contracture of the tissues below the eye.

Dec. 15. Granulations growing very rapidly and bright red in appearance. There is no exudate. Smear shows only an occasional organism.

Dec. 19. Ready for a plastic operation. Unfortunately, the blood culture was not made until 24 hours after the first injection of serum. The photograph was taken Nov. 27, after the edema had subsided.

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## Original Articles.

## THE DIAGNOSIS OF THE CONDITIONS CAUSING PAINFUL AND IRRITABLE BACKS.\*

BY JAMES WARREN SEVER, M.D., BOSTON.

THIS subject has been uppermost in my mind for several years, on account of having had to decide in many separate cases the conditions existing in an individual's back, and to give a definite diagnosis and prognosis, at one examination. This has not been a light responsibility, and I am now in the process of looking up these cases to see how far my opinions were correct. I had hoped to have the data ready for you tonight, but my time has been so short, that it is not ready for presentation.

These cases were seen for the Massachusetts Industrial Accident Board as an impartial examiner, and presented all types of backs in all types of individuals—male and female. There was always the psychological element of litigation, which is supposed to be absent under the law in compensation cases, present in these individuals, which added to the difficulty of the correct diagnosis.

These cases differed, however, from the ordinary routine backaches or strains one usually sees, because of the constant factor of definite trauma as an exciting cause.

Painful and irritable backs are most common in the usual run of medical practice, without a history of accident or trauma, and these are the cases I want especially to call your attention to. In fact there are few diseases in which backache does not occur. The condition is attributed to the kidneys by the kidney pill man, and to the feet by the maker of orthopedic shoes, as well as to other ills which flesh is heir to by the person who may happen to have an infallible remedy for that particular ill. It is a much

\* Read at the Newton Medical Society, January 14, 1918.

neglected subject and it is not surprising that many cases drift about to become the prey of the patent medicine man, because of lack of adequate examination and definite checking up of the patient's symptoms, history, and posture. I say this advisedly, because so many cases can be so easily relieved by simple treatment.

Now what is meant by a painful or irritable back? It is this—a person complains of pain in the back generally situated low down, that is, at or below the dorso-lumbar junction, and of constant or intermittent duration. Associated with this pain there may be a dragging feeling in the lower back, which may be worse after walking or standing, but may be present only when sitting, and is relieved by walking about.

There may be tenderness—generally vague—extending from the sacro-iliac joints, which are at times the points of greatest tenderness, to the shoulder blades and the back of the neck. At times this pain extends to the legs, down the back of the thighs, accompanied by a feeling of numbness in the legs, which is best expressed by the patients themselves as a sort of "wooden feeling." Following trauma the tenderness is generally localized at the site of the injury and may be accompanied by more or less muscle spasm.

#### CAUSES OF BACKACHE.

There are three large groups of cases which can be readily differentiated at once as having definite conditions which may cause backache. These are as follows:

1. Arthritis of the spine. This condition is often seen and is a painful and persistent condition. It has its periods of remission and exacerbation, until such a time as the vertebrae become fused, when the painful joints in the spine no longer exist and the cause of the pain is removed, namely, motion between irritable joint surfaces. This condition generally exists with other definite signs of arthritis, and may occur spontaneously, or may be present even without symptoms, until some strain or trauma lights the process up, and results in great and persistent disability. Arthritis of the spine occurs most often at or after middle age, and is apt to appear in the laboring man as well as the desk worker. It is not uncommon, on taking an x-ray of a laborer's back, following an injury, to find a considerable degree of hypertrophic arthritis already present, which has been aggravated, at least symptomatically, by the accident, and consequently prolongs his disability and compensation.

Treatment in these arthritis cases generally resolves itself into the application of a plaster jacket, a backbrace, or canvas corset—anyone of which may have to be worn for an indefinite period to insure adequate fixation to the spinal joints. A diagnosis of arthritis of the spine without an x-ray in a given case is not impossible, and at times easy. The back is stiff to bending in any direction, the onset may be sud-

den or gradual and the disability is great. The cause may be infectious or occupational. The progress towards recovery is slow, even with good treatment.

2. Traumatism, especially frequent in the industrial classes, a very frequent cause of a painful back, is a most common cause of litigation and is a condition about which, an impartial examiner finds it very difficult to arrive at any absolute hard and fast opinion. There is no doubt about the trauma—either direct or indirect—the question is, what damage has that trauma caused? Is there a muscle sprain, a ligamentous tear, a sacro-iliac sprain, a fractured transverse process, or a crushed vertebra? An x-ray may clear up some of the bony injuries, but will not help, except in a negative way, the soft part ones. If the condition is a muscle sprain, the history will be of value. How did the pain start? What was the patient doing when it began? Certain of my cases have had sudden pain in the back when trying to lift a barrel of ashes or when lifting other heavy objects. They felt, as they say, something give way in the back. Generally the pain is in the lumbar region in these cases. There may be localized tenderness over the spinal muscles, and at times the soreness extends around into the flank. I believe the majority of these cases are ones in which a muscle fiber or fibers are torn and, generally, strapping and hot applications, with early use, will effect a cure. Ligamentous tears act in about the same way, are generally of longer duration, and the pain and soreness are deeper seated. Ligamentous tears may be situated in the region of the sacro-iliac joint and so confuse the diagnosis. The ligamentous insertions of the great back muscles in the region of the sacro-iliac joint often lead to doubt and confusion when an injury is localized there. They do not get well as quickly, and heavy work in the future is apt to produce soreness and lameness at the same spot. The treatment in general is the same.

A fractured transverse process is not an uncommon result of having objects fall on the back, or of being thrown against something solid and striking the back. Three recent cases I have seen occurred as follows: One had a pulley-block fall and strike him on the back and break the transverse process of the second lumbar vertebra. Another was a car conductor who was thrown against a car door when the car started suddenly. The third, whose x-ray I will show you, was run over by a team and had all the transverse processes on one side of his lumbar spine broken. Direct and not indirect violence is usually the determining cause. The pain at first is considerable—marked localized tenderness is present, motion is considerably restricted, and as a rule strapping and later baking and massage effect a cure, so that work is resumed in three to four weeks. Complete relief from pain and soreness may not be obtained,



however, for months. There are several other bony conditions which may cause low back pain of which I wish to speak. They are usually associated with trauma and present only, clinically, painful and irritable backs, associated with disability.

The first type is seen usually following falls of some violence, as falls down elevator wells, being thrown out of a carriage or hammock, etc. Clinically there is generally an increase in the normal lumbar lordosis or hollow back, pain and numbness may exist in the legs and the individual is considerably incapacitated, with a very rigid spine. Examination shows a prominent sacrum, and in palpation of it the fingers slip on to a sort of shelf at the junction of the sacrum and the fifth lumbar vertebra. X-rays show that in these cases there has been a definite slipping forward of the fifth lumbar vertebra on its articulation with the sacrum, resulting in some cases in definite cord pressure symptoms. A lateral x-ray will show this defect very well. Treatment should be directed to support of the spine, by braces or jackets. Some cases have been relieved by a bone graft operation to fix the slipping fifth lumbar vertebra to the vertebra above and the sacrum below, and so give relief. The condition is known as traumatic spondylolisthesis. The second so-called bony cause of back pain is one which, to my mind, is yet not proven, according to the English jury verdict. Certain observers have stated that a long transverse process of the 5th lumbar vertebra causes pain in the back by impinging on the crest of the ilium and have shown x-rays apparently showing this condition. Certain cases have been operated on with relief by removing the offending process. It is not yet clear to my mind whether rest in bed for several weeks or removal of the process caused the cure. The operation is difficult and dangerous. If you recall the anatomy of the region you will remember that the transverse process of the 5th lumbar vertebra is situated well in front of the plane of the crest of the ilium, and as increased lordosis, which is said to cause the impingement, increases also the distance between these two bones, I fail to see just how anything but inaccurate observation, or an enthusiastic operator, could attribute pain and disability to such a cause in the absence of anything but definite congenital malformation.

3. The third class of cases, generally recognized as such, but often associated with definite orthopedic defects, is that where displacement of the pelvic organs in women is at fault.

Hutchins<sup>1</sup> believes that an anteposition of the uterus, associated with a descent of the cervix, and so resulting in an engorgement of the ovaries and their veins, is a frequent cause of backache.

Graves,<sup>2</sup> on the other hand, found that 76% of 500 cases had backache associated with retrodisplacement of the uterus, and a corrective

operation for this condition relieved or benefited 86% of 263 cases he could trace.

MacFarlane<sup>3</sup> states that 16% of 938 gynecologic cases complained of backache. The pelvic findings in 159 of these cases comprised chiefly lacerations, retroversions, prolapse, and inflammatory conditions, such as adherent appendages and endocervicitis. The incidence of marked nervousness in these 159 patients with backache was about 9.3%, or about equal to the incidence of adherent appendages, and half as frequent as that of prolapse. She thinks that the neurasthenic state predisposes to backache of pelvic origin by lowering the resistance of the central nervous system. The fact that the backache was permanently relieved by appropriate gynecologic treatment led to the belief that these backaches were caused by the pelvic condition. Here you have three authorities all agreeing that pelvic conditions cause backache.

One point of interest and importance which Graves makes is that uterine back pain is invariably confined to the sacral or very low lumbar regions.

On the other hand, operations performed to correct pelvic displacement because of backache, often fail because the orthopedic or postural defects of the individual are not corrected. It is fair to presume that in a certain number of cases that, had orthopedic measures been carried out first, the operation would not have been necessary.

We now come to a large group of cases which do not fall under any of these previous classes mentioned, but which are very common. These cases may be subdivided into two classes, namely, (1) static or postural strain and (2) sacro-iliac strain.

This brings us to the definition of what is meant by this classification, and I will take them up, therefore, in order.

1. Static or postural strain, not the result of trauma. In an important and interesting paper several years ago Reynolds and Lovett<sup>4</sup> determined the center of gravity of the human body in the upright position, and noted various changes from the normal, and their effects on the posture and musculature. They showed that a forward displacement of the center of gravity put increased work and strain on the back muscles, which, if sufficiently long continued, produced backache and strain; and arrived at the conclusion, from their experimental work, that static backache was the result of definite mechanical defects in the posture.

Now you know that normally in the upright position an individual, when at rest, is supposed to carry his weight on his bones and not on his muscles or ligaments. The center of gravity generally falls in a line running from the tip of the mastoid, through the front of the shoulder, great trochanter, just back of the patella and about an inch in front of the external malleolus. Any variation from this normal implies muscle



and ligamentous strain and so pain—therefore, when a person habitually stands with the body in a position of poor posture there is created a lack of normal muscle balance and consequently muscle strain, which is translated into pain. The so-called “carrying posture” is a good example of poor standing position. Here the trunk is carried back over the pelvis, the back is rounded and the abdomen protuberant, the low back hollow or flat. Poor postures are seen many times in poorly nourished young people who stand with a slight lateral curvature and a round back and shoulders, and who complain of backache. Other types are those individuals, women especially, who present on examination a hollow back with a marked increase in the normal inclination of the pelvis. Often there is a moderate degree of tenderness along the back muscles and over the sacro-iliac joints. A large number of these latter type of cases complain also of vague pains in the legs and feet. Into this class can be put also those obese individuals who have to lean back to balance themselves, and so by constantly putting extra work on their back muscles, tire them out and stretch their back ligaments and so strain their ligamentous insertions and may strain the sacro-iliac joints. These are best treated by a corset or belt which holds up the abdomen and takes the strain off the back and puts it on a brace or corset. An examination should be made to determine whether or not there is a short leg in all cases, for many cases of backache are due to an unrecognized short leg and can be cured by making the short leg as long as the other one. One other point of the greatest importance is the presence or absence of a short or tight heel cord. Normally, the foot should go about 10° beyond a right angle in dorsal flexion, but you will find that in many of these indefinite backache cases, dorsal flexion even to a right angle is not possible, and an attempt dorsally to flex the foot causes pain all along the back of the leg even extending to the buttock and back. This condition is probably part and parcel of the whole lack of proper muscle balance and posture, but its correction alone will often cure a troublesome and persistent backache. Associated with these tight heel cords, are often feet which are the reverse of flat, in that they present high arches and painful callosities on the balls of the feet. Stretching the heel cords several times a week, which relieves the so-called “wooden” feeling in the legs, with a specially designed machine, and taking the weight off the balls of the foot by means of a plate or an anterior heel, as devised by Dr. Cook of Hartford, which consists in a lift half an inch wide by an eighth to half an inch thick running across the sole of the shoe, just behind the ball of the foot. This acts as a wedge at that point and causes plantar flexion of the toes, and elevation of the metatarso-phalangeal joint and so relieves pain and pressure at that point; and

raising the heels of the shoes a quarter to a half an inch will often cure these cases. Raising the heels of the shoes will do several things. First, it will generally please the ladies who dread a low heeled, sensible shoe; therefore their pride is appeased and they begin to think that you are really quite sensible. Second, by so doing, you are taking the strain off the tight gastrocnemius muscle, and so relieving pain. Third, you are tipping the body back as a whole and consequently are relieving the tension on the irritated erector spinae group of muscles and letting up on their bowstring tension. The effect of these simple remedies in suitable cases is remarkable, and the relief from pain and discomfort marked often in 24 hours.

Certain patients I have seen always develop exquisitely tender areas about the buttocks and anus, when their posterior musculature becomes too tight, and one even develops, regularly, anal fissures which promptly clear up after stretching. It is needless to add that proper corsets, which support the strained back muscles and the abdomen well, should be supplied to all these cases. Such a corset should be no longer than the trochanter, should grip the pelvis firmly, should fit the back well, should be no higher than the top of the shoulder blades behind, and the lower ribs in front. It is better front laced, should have a flat abdomen, and is best applied lying down.

This type is common, and I believe they are often called cases of sacro-iliac strain, whereas, to my mind, they have no such condition. If they have the maximum amount of their discomfort over one or both sacro-iliac joints, associated with these other conditions, I believe that it has simply happened that the maximum strain has localized there, and that a strain of the sacro-iliac joint has developed secondarily and is not primary. They will get well under the above course of treatment plus rest and, later, exercises and massage.

There are also many cases of backache seen in poorly developed individuals, whose musculature is poor, whose resistance is low, and whose bodily posture is bad. These cases are the result of the same chain of events—namely, poor posture and lack of muscle development and balance, and are to be treated along the more general lines of developmental work. Many neurasthenics come into this class, but as a rule the backache seen in them is one which is distributed generally all over the back and rarely localized in any one spot.

2. **Sacro-Iliac Strain or Sprain.** This last class has been before us for a reasonably long time, and has been a popular one in which to put all cases of low backache. The joints have been there anatomically, the tenderness and pain has been situated at or about the joints, and the diagnosis is one easy to make offhand, without much of an examination, and satisfies both the doctor and the patient.

Now it is not to be denied that the sacro-iliac joints are real joints and are subject to such sprains and diseases as are other joints, but that all low backaches should come from these joints seems too good to be true. I think that the explanation offered above in the description of the postural backaches covers a good many so-called sacro-iliac strains. The strains and slippings of the sacro-iliac joint during and following pregnancy are common in everyone's experience and can generally be relieved by proper strapping and a good corset. One word of caution about strapping: always carry the plaster from in front of the anterior-superior spine on one side, to in front of it on the other, pulling it as hard as you can. Also put a felt pad about half an inch thick over the sacrum, extending up the lumbar spine, and you will get better results. Most strapping, as I see it, is inefficiently applied.

Sprains of the sacro-iliac joints are seen after sudden wrenches, especially when the person is bent forward and to the side. They seem to follow twisting strains rather than direct ones, either in the upright or flexed position. Certain cases are accompanied by local swelling and tenderness and, although increased motion and slipping can rarely be detected and the x-rays invariably in my experience prove negative, there is no doubt as to the condition. Associated with these sacro-iliac strains one usually finds more or less pain and discomfort down the back of the leg on the affected side, extending often to the foot and calf. As the condition in the joint improves, this pain in the leg gets well. This is attributed to the pressure on the nerves of the sacral plexus, which lie on the anterior surface of the joint in the pelvis, as shown by Albee<sup>6</sup> and others. This nerve involvement is, I believe, not due to a pressure of the slipping joint, which cannot slip enough to cause such pressure, but may be due to local congestion which involves the tissues about the sacral cord. Slipping in the joint is, I believe, rare in the usual run of cases, and is observed only in those cases where ligamentous relaxation is great, such as is seen after pregnancy and in certain other cases of long duration of poor posture and back strain in rather fat people. I have seen only two such cases where the slipping could be felt, both in obese washwomen, who were so incapacitated finally, that in order to get out of bed they had to roll on to the floor and then climb up on themselves much in the same way a case of Pott's disease or progressive muscular atrophy gets up from the prone position. They were both promptly relieved by strapping and, later, corsets. Certain cases of acute sacro-iliac sprain, often seen following exposure and resembling an infectious or rheumatic attack, exhibit the greatest degree of pain and disability. Slipping of the joint cannot be demonstrated, but is felt and described by the patient when it occurs, generally with a twist of the body; the pain is excruciating and often accompanied with nausea or faintness. There is gen-

erally some pain down the leg on the affected side, and local tenderness over the joint. There is no mistaking these cases, for the picture is generally complete. Salicylates, rest and strapping often give relief in a few days, plus manipulation in a certain number of cases.

In about 80 cases of painful backs, seen for the Massachusetts Industrial Accident Board, in the last year or two, as the result of injuries, there was only one or two which seemed to be cases of sacro-iliac sprains as against 24 cases of compression fracture of the vertebrae; which is a most common condition and one frequently overlooked.

Two other points in connection with sacro-iliac slipping—relaxation and strain, which I wish to emphasize. First, when there is a real looseness or sprain of these joints, the patient always states that he feels as if he were "breaking in two." This is a common statement and I believe applies to no other condition. Second, in regard to the so-called leg-raising test, so commonly used, I believe it is fallacious, for this reason. Any injury to the lower back which results in back strain causes muscle irritability, which of itself will limit leg-raising with the lower leg extended. This is especially true in the static type of cases and should no more be regarded as a sign of sacro-iliac strain than of flat-foot. It is too frequently associated with other back conditions to be pathognomonic of any one of them.

A word of caution about back pain—never be content with an examination which does not include an x-ray, especially in cases of trauma. It is not difficult to have one made, and will reduce the percentage of guessing and raise the percentage of correct diagnoses.

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### Clinical Department.

#### A CASE OF CEREBROSPINAL MENINGITIS SUCCESSFULLY TREATED BY INTRASPINAL AND INTRAVENTRICULAR ADMINISTRATION OF ANTI-MENINGITIS SERUM.\*

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THE following case of cerebrospinal meningitis presents several features of unusual interest both clinically and therapeutically. In

\* Read at meetings of the Middlesex South District Medical Society, October 10, 1917, and the Boston Society of Psychiatry and Neurology, December 20, 1917.

particular, it emphasizes the need of intensive treatment with anti-meningitis serum, not only intraspinal, but if indicated, as in this case, intraventricularly.

The case is that of a naval lieutenant who was brought to the McLean Hospital May 6, 1917, in a delirious condition, the previous history of which was unknown, even to the immediate family, the patient having arrived at his home in a state of collapse and confusion on the morning of the day of his admission to the hospital, unable to give any account of his experiences up to that time. Later, however, facts came to light which are embodied in the following more detailed history.

The family history shows that the paternal grandmother died of a cancer of the throat. The father died of a cancer of the bladder after the patient's discharge from the hospital. His mother died of cerebrospinal meningitis a week after the patient's admission to the McLean Hospital, having contracted the disease from him after an exposure of a few hours while he was at home, just before his admission to the hospital.

The patient, who is 31 years old, was thought to have had spinal meningitis at the age of 6 months, having had several convulsions for 24 hours. Since that time there has been, however, nothing to suggest the presence of epilepsy or other nervous disorders.

His early life was uneventful. He was appointed to the Naval Academy at Annapolis, from which he graduated in 1907. After graduation he progressed rapidly in the service, and at 21 was given command of a vessel. Some time later he was recommended for promotion, and when taken sick was chief signal officer on the flagship of the squadron.

In January, 1917, he had a severe attack of ptomaine poisoning while attending an official banquet in Haiti. For several days he was in a critical condition. He recovered from the immediate effect of this illness, but did not fully regain his normal strength, though he was able to resume his work. Aside from this illness and its after-effects, he has always been in excellent health.

He was stationed with the fleet when he became sick, and left his ship presumably on May 4 on a 10-days' leave of absence because he felt somewhat nervous and run down. Upon reaching New York he became very ill, but with assistance was able to go from his hotel to take the midnight train for Boston. Before leaving, he wired his family that he would be home the following morning. Reaching Boston, he took a taxicab for his home, and on his arrival was so sick that he had to be helped into the house. After getting into the house he said he was sorry to come home sick, but that he was a nervous wreck and had fainted just after sending the telegram. He appeared to have a chill and went to bed. He seemed dazed and complained of a terrible headache and rubbed his head and moved about very restlessly.

At one o'clock he began to get excited, and thrashed around so much that he broke down the bed and neighbors were called to help care for him, and when the physician arrived at his home he found the patient dazed, pale and much excited. His pupils were equal and the reflexes were normal. He had no fever. He was given some citrate of magnesia and vomited. A quarter of a grain of morphia was given, and at 2 o'clock he was quiet. A little later he became excited again, and a quar-

ter of a grain of morphia and 1/100 of a grain of hyoscin were given, after which he slept.

He was brought to the hospital about 4 o'clock on the afternoon of May 6, well under the influence of hypnotics, and slept for nearly two hours. When seen by the physician, a little after admission, he could not be aroused, was limp and perspired freely. His pulse was 72, of good quality, but quite irregular; respirations were slow and deep. There was questionable rigidity of the neck, but he was so resistive that this could not be accurately determined and was, if present, not constant. The pupils were about 3 mm. in diameter; the left seemed a little larger than the right. They responded to flashlight. The reflexes were everywhere active and equal. At this time a definite Babinski was obtained on the right, but this later disappeared. There was also considerable resistance offered when the leg was raised after the thigh had been flexed. The abdomen seemed quite hard. There was an abrasion of the skin extending along the spine in the lower dorsal and upper lumbar region. He was catheterized and 16 oz. of urine were withdrawn.

During the night he was less somnolent and began making restless efforts to get out of bed. The following morning his temperature was 97 and the pulse 88, and throughout the day he remained delirious, talked about being aboard ship, asking if shell and powder were ready, etc. Momentarily he was clear and made normal responses, and he continued to complain of severe pain in the center of his head and in his back. His temperature remained sub-normal until night, when it rose to 101.8.

On the 8th he appeared very sick. He was rather dull and only semi-conscious. Talking with him seemed to increase his restlessness, which was at all times present. He was not resistive, and complied as well as he could with requests, and always tried to be polite and pleasant. He kept up more or less of a fragmentary talk as he moved about. He apparently tried to answer questions but did not seem able to. Only now and then in his delirium could a relevant response be obtained. Physical examination on this day showed a slight left facial palsy. The left corner of the mouth did not close completely. The tongue pointed to the right. The left cheek seemed fuller than the right. The eyes were prominent, and the tension of the right was possibly a little greater than that of the left. Both pupils reacted promptly to flashlight and accommodation. The left was distinctly larger than the right. The reflexes were everywhere present and active. As far as they could be elicited, there appeared to be no sensory disturbances. There was no ankle clonus, no Babinski and no Kernig's sign. The skin over both the elbows, the knees and buttocks was covered by a punctate eruption. Wassermann examination of the blood was negative. Throughout the day he continued much confused and rambling in his conversation.

On the 9th his condition grew rapidly worse. He was usually delirious, often somnolent, but occasionally cleared enough to give some rational responses. He tried to cooperate when the nurse attended him, but would immediately become stuporous. He appeared to be suffering continuously from severe headache.

In the evening he seemed very weak, and symptoms of meningitis were quite evident. Though he had been passing considerable urine during the day, he was catheterized and 32 oz. of urine were

withdrawn. A little later his neck seemed rather rigid, and temperature, pulse and respiration remained high. His pulse became weak, the stupor became deeper, respiration became irregular and shallow, at times distinctly of the Cheyne-Stokes type, and he seemed to be failing rapidly. Dr. W. Jason Mixter was called in consultation, and at 11 p.m. a lumbar puncture was made under primary ether and 10 cc. of a cloudy fluid were withdrawn. Examination of the fluid by Dr. Frederick T. Lord showed the presence of meningococci. At 2 a.m., May 10, Dr. Lord, under primary ether, withdrew 22 cc. of a cloudy fluid and injected 16 cc. of anti-meningitis serum. Almost immediately after the first withdrawal of fluid the patient seemed to rally somewhat. After the injection of the serum his general condition as to heart action and respiration improved, though he remained semi-conscious until about 5 a.m., when he awoke and talked quite naturally with his mother. About an hour later he talked clearly with the nurse and dictated a perfectly coherent, well-expressed and moderately long letter to a superior naval officer. He called the nurse by name and told as much as he could remember of events immediately preceding his sickness.

The next morning he was again stuporous, though his temperature had dropped and his pulse and respiration remained high as before. He could be roused a little, but could only indistinctly mutter a very few words, sinking quickly into unconsciousness again. At this time the asymmetry of the face was not so apparent; the pupils were small and equal and the reflexes showed nothing abnormal. At 9 p.m., under primary ether, 32 cc. of a cloudy fluid were withdrawn by lumbar puncture and 25 cc. of anti-meningitis serum were injected. The cultures of the fluid gave a heavy growth of the diplococcus intracellularis.

On the following day his condition showed improvement, but he was somnolent much of the time. When awake he complained of pain in the back and slight headache. His temperature dropped to normal and the pulse and respiration showed a corresponding improvement. At 7 p.m., 30 cc. of fluid were removed by lumbar puncture, and 25 cc. of serum injected by Dr. Lord. This was attempted under novocaine, but upon injecting the serum the patient complained of very severe pain in the hips and legs, and primary ether anesthesia had to be resorted to. The withdrawn fluid proved to be sterile. Following this operation, the patient's condition again showed rapid improvement. During the night he again developed a slight febrile reaction, though his fever dropped to normal at noon on the 12th.

In the evening his temperature was again somewhat elevated, and under local anesthesia 35 cc. of a cloudy, somewhat bloody, fluid were obtained by spinal puncture, and 30 cc. of serum were again injected under primary anesthesia. For several hours the temperature rose, reaching 104 at midnight. He was very restless and delirious during the night, but during the following day slept for an hour or so from time to time. An examination by Dr. Lord of the fundus of both eyes was practically negative except for slight blurring of the discs. Examination of the ears, likewise, showed nothing abnormal.

The following day his temperature was again elevated and there was very little change in his general condition. On the 15th the situation was

about the same. His temperature continued high and irregular, severe headaches continued on and off and the delirium persisted. While he was not losing ground, he was not making much progress.

On the 15th, a lumbar puncture was again made and 14 cc. of a clear fluid were withdrawn and 7 cc. of serum were injected. While clinically this was followed by a temporary improvement, the delirium and irregular temperature persisted for the next few days. The withdrawn fluid was sterile, and it was evident that no further progress could be made by spinal injections.

On the morning of the 18th his temperature again reached 103. His pulse was rapid and the respiration was about 30. With the persistence of the fever and symptoms indicating intracranial pressure, it was very evident that the infection was continuing in the cerebral ventricles, and that the disease process had probably become walled-off. The patient's remarkably favorable reaction after each serological treatment intraspinally gave rise to the hope that if serum could be introduced directly into the ventricles a favorable reaction might be possible. Although precedent determined that in cases of this kind trephining should be a measure of last resort, it was felt that in this case any loss of time meant a fatal termination, or at best a chronic meningitis, and it was decided to operate without delay. On the morning of the 18th, under ether, a trephine opening was made 3 centimeters behind and above the left external auditory meatus; the left ventricle was tapped and 15 cc. of an opalescent fluid, under considerable pressure, were withdrawn. This was replaced by 10 cc. of anti-meningitis serum. The ventricular fluid was strongly infected with the meningococcus. At the same time 10 cc. of fluid were withdrawn by lumbar puncture. This was slightly yellow in color, but clear and sterile. The needle which was introduced into the ventricle was about the size of an ordinary needle used for lumbar puncture, though it was closed and rounded at the end, with two small lateral openings, thus avoiding any cutting of the cerebral tissue. The patient bore this operation very well. In the afternoon his temperature had dropped to 100, his pulse to 90, and it was of good quality. While he was somewhat confused he was free from headache. The following night he was rather restless. In the afternoon his temperature again suddenly rose to 101.5, and the ventricle was again tapped through the same opening; 15 cc. of sterile fluid were withdrawn and 11 cc. of anti-meningitis serum were injected. The following day his temperature again reached 104 by evening. His general condition, however, continued good, and it was felt that, since the left ventricle had been cleared up, the infectious process was going on in the right ventricle, and that the connection between the two was undoubtedly closed by exudate or an inflammatory process, and it was decided the following morning to enter the right ventricle. Dr. Mixter trephined this time over the anterior part of the ventricle, slightly to the right of the median line in the posterior part of the frontal region. The ventricle was tapped and 25 cc. of an opalescent fluid under strong pressure were removed, which again gave a strong growth when incubated. Twenty-two cc. of the serum were injected. Again, a small amount of clear fluid was withdrawn by lumbar puncture. Following this operation, the temperature again rose to 104 in the afternoon. The following day the temperature

continued high, and in the evening the right ventricle was tapped again and 40 cc. of sterile clear fluid were withdrawn and 30 cc. of serum injected. At the same time 12 cc. of fluid were withdrawn by lumbar puncture and 10 cc. of serum injected. Following this, he continued to show some general improvement, rested quietly most of the time, complained less of headache, but his temperature, while remaining lower, still showed an irregular course. Owing to the persistence of the symptoms, it was decided to do another intraventricular puncture, and as the patient showed considerable exhaustion and was rather dull and somnolent, it was attempted under local anesthesia. On this occasion a new trephine opening was made in the posterior frontal region, over the left ventricle. The patient bore the operation well, with but little shock and a minimum amount of actual pain. Forty cc. of clear sterile fluid were withdrawn and 25 cc. of serum injected. During the process of trephining, his pulse rose to 164, and suddenly dropped to 80 when the fluid was withdrawn, but as soon as the serum was injected his pulse rose to 124. He complained of headache at the end of the withdrawal of the fluid and also after more than 25 cc. of the serum had been injected. This headache was relieved after the excess of the serum was withdrawn.

Following this operation the patient's general condition improved steadily. While he continued to have a slight elevation of temperature occasionally, he became much brighter, his headache was relieved almost entirely, and when present it was very intense for a short time and then would cease suddenly. As an extra precaution, on June 7 a lumbar puncture was made and 20 cc. of sterile fluid were withdrawn and 10 cc. of serum injected. Examination by Dr. Lord of the eyes and ears at this time showed them again to be practically negative.

In addition to the serological treatment, he was treated by full feeding, at first with chiefly liquid diet, then with solids also, and with large amounts of fluid. There was free catharsis with enemata, ice-bag to the head and internally urotropin and occasionally small amounts of aspirin. During the first few weeks of his illness there was a well-marked polyuria. On several days he passed more than 100 oz. of urine, and it was frequently necessary to catheterize him. On the 7th day of his illness he developed an orchitis, which lasted for about a week and gradually subsided. About a week after the last intraventricular treatment he developed an arthritis (serum disease) which was first noticed in the knees, then the hips, shoulders, elbows and wrists. The pain was quite severe. There was no redness or swelling and the inflammation lasted a few days only in each of the joints, except in the wrists, where the pain was more intense and the duration a few days longer. There were no typical skin lesions at any time, except for the eruption in the dependent parts previously described, and a slight erythema of the ankles about the 4th day of the disease. The stiffness of the neck was noticeable throughout the worst part of his illness, but it gradually disappeared, as well as Kernig's sign. There was partial deafness of both ears during the time of his illness. The hearing in the left ear, however, returned rapidly, though even after recovery the hearing in the right ear had not completely returned. The left facial palsy, which was more or less prominent during his illness, gradually disappeared

during convalescence and left no trace. His vision was at no time seriously affected.

On admission there was considerable albumen in the urine with some red corpuscles and hyalin and granular casts, but these disappeared by the middle of May.

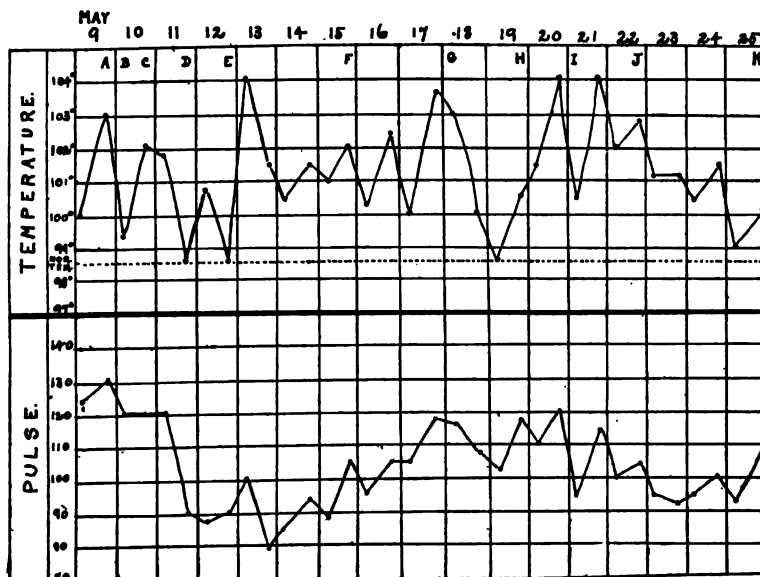
Mentally, there were frequent changes, with comparatively steady improvement, however. He was sometimes quite delirious, disoriented, thinking himself on shipboard, giving directions, having visual and probably auditory hallucinations; within an hour or two he might be quite dull and stuporous, or comparatively clear, recognizing and naming those about him, knowing he was at the McLean Hospital, and trying to cooperate in every way. At such times he would talk quite rationally for a few minutes, showing good orientation and appreciation of his situation. This might be followed by some remark wholly inconsistent with such orientation. He sometimes appreciated these lapses and commented on them. Occasionally he was quite talkative. The periods of complete clearness and orientation increased in length, but even as late as the middle of June, when superficially he seemed perfectly oriented, he occasionally made some wandering remark, which he, however, recognized later as absurd.

During his early convalescence he seemed a trifle dull and sluggish, and not as wide awake as one would expect of a man of his accomplishments, though as he became stronger he became brighter and more alert, and for some time before his discharge he was considered entirely natural by his family. Except for a nerve deafness of the right ear, he was fully recovered upon his discharge from the hospital July 21, 1917.

About the first of December he reported that he felt perfectly well, that he had just passed his medical examination, and that he had been ordered to his ship to report for duty at once, and at present he is presumably with his ship in his former capacity.

While the suggestion has been made by various writers that, on the ground of ventricular block or an obstructive internal hydrocephalus, intraventricular injection of serum appeared to be a rational plan of treatment, no one undertook to treat cases in this manner except in children or in adults *in extremis*. The necessity for intraventricular treatment must be at once recognized and begun early, before a walling-off takes place and before the inflammatory process has done permanent damage, if the treatment is to meet with any measure of success.

Intracranial injection of serum has been done frequently in infants through the fontanelles, and as early as 1908 Cushing and Sladen<sup>1</sup> reported a case of cerebrospinal meningitis in a baby six months old. Five intraventricular punctures were made and serum injected. This was done late in the disease, and while the child seemed to progress favorably, it died after a sudden collapse. They suggest "that it may be advisable in other instances of ventricular obstruction in the acute stages of the disease, to perform, even in adults, ventricular punctures and, if organisms are present, to administer serum, with proper precautions, directly into the ventricle."



REFERENCE TO CHART.

## FLUID WITHDRAWN BY LUMBAR PUNCTURE

A. ....	10 cc.
B. ....	22 "
C. ....	32 "
D. ....	30 "
E. ....	35 "
F. ....	14 "

## INTRASPINAL SERUM INJECTION

15 cc.
25 "
25 "
30 "
7 "

## FLUID WITHDRAWN FROM VENTRICLES

G. Left Ventricle, 15 cc.	10 "
H. " " 15 "	11 "
I. Right " 25 "	22 "
J. " " 40 "	30 "
K. Left " 40 "	25 "

## INTRAVENTRICULAR SERUM INJECTION

10 "
11 "
22 "
30 "
25 "

In a recent issue of the *Journal of the American Medical Association*, Flexner<sup>2</sup> presents a complete résumé of our present conception of cerebrospinal meningitis. He speaks of the frequency of hydrocephalus which arises from interference with the escape of cerebrospinal fluid, usually infected with meningococcus, from the cerebral ventricles, through exudates which are plastered over the exits at the base of the brain. He also suggests that the serum might be safely and even efficiently introduced directly by ventricular puncture.

Chiray,<sup>3</sup> in 1915, recognized that the failure of serotherapy in certain cases of meningococcus meningitis was due to the accumulation of pus in the ventricles of the brain, and while he did not attempt it, suggested that the pyocephalus might be arrested by puncture of the ventricles, if done in time.

Netter's<sup>4</sup> experience was not very encouraging. He treated 12 cases, all infants, intraventricularly, though none recovered. The only adult case he treated in this manner was a woman of 29, who received two intraventricular as well as intravenous injections of serum on the 93rd day of her illness. The patient seemed relieved, but died with symptoms suggesting anaphylaxis.

Labbé and Zislin<sup>5</sup> injected 20 cc. of serum into the ventricles of an 11-year-old child suffering from walled-off meningitis, and four days later administered 8 cc. in a like manner. The injections were well borne and progressive improvement seemed to indicate recovery, but the patient died in syncope. They feel that if the operation had been performed earlier and on both sides, the treatment might have saved the patient.

Other writers refer to the possibilities of intracranial treatment in cerebrospinal meningitis, though in most of the reported cases this measure was employed too late.

We have in this case positive evidence of the therapeutic efficacy of anti-meningitis serum. The remarkable improvement in the patient's general condition immediately following each administration of serum was very striking, not only clinically, but its value was emphasized by the prompt disappearance of the micro-organism from the subarachnoid spaces and ventricles. The treatment must be controlled by bacteriological analysis of the spinal fluid and must be intensively followed up if the symptoms persist and the diplococci remain in the cerebrospinal fluid. After the spinal fluid has been sterile for some time intraspinal serum treatment is no



longer indicated. The serum must come in direct contact with the infected area to be of any value, and must be introduced directly into the cavity where the micro-organisms are.

That this procedure was fully justified was evident immediately after the first cranial treatment. There was almost instant relief of the headache, the mental condition improved, and in spite of sterile spinal fluid, the left ventricle contained a cloudy fluid full of diplococci. The four following ventricular taps and serum injections were carried out without special incident or difficulty, and the results fully justified the means.

In this case no unfavorable symptom or shock followed trephining and intracranial medication; on the contrary, almost immediate alleviation of the symptoms was noticed. In fact, on one occasion, trephining was done and the serum introduced into the ventricles under local anesthesia, without any undue pain or shock, and with the advantage that the patient was conscious of intraventricular distention, and helped to control the amount of serum, which was introduced, by the degree of headache.

In fatal cases, autopsies have shown that the micro-organisms are almost invariably found in the cerebral ventricles. In this case the persistence of the symptoms indicated with certainty ventricular block, and that the process was going on in the ventricles.

Cases of cerebrospinal meningitis should no longer be considered as purely medical, and certainly when such cases reach general hospitals the question of surgical interference should be given early and careful thought.

The dread of brain surgery, in general, will undoubtedly deter many from recommending what appears to be a radical operation, the benefits of which are possibly in doubt. However, the procedure is in no way comparable to a major surgical operation on the brain, with its occasional disagreeable complications. A small trephine opening similar to that made for the purpose of intraventricular treatment for syphilis, which is now quite universally carried out, is all that is indicated. In cerebrospinal meningitis the disease is more acute, the treatment is more positive in its effects, and the operation is fully justified in the light of our present knowledge of the disease, where the symptoms indicate cerebral walling off.

Early intraventricular treatment might be expected to diminish the amount of pyocephalus, and with less pus and exudate the dangers of closing important foramina, and thus causing a walling-off or hydrocephalus, may be prevented. It is a question of destroying the micro-organisms before they have had time to produce an intense inflammatory reaction or to have become inaccessible by becoming pocketed off.

Another feature of considerable importance, which throws some light on the infectious nature of the disease and on the period of incuba-

tion, of which there is much uncertainty, is the fact that the patient's mother, who was exposed only a few hours while he was at home, after three days developed cerebrospinal meningitis and died a few days later. The patient had not seen his mother for at least six months previous to this time. In most cases the source of the infection is difficult to trace, and cases of direct contagion, while not unknown, are somewhat uncommon. The necessity for strict isolation is, of course, apparent. In the case of the mother, the bacteriological examination of the spinal fluid positively identified the disease, although clinically there was little to suggest it. She suddenly developed a stupor, and if it had not been for the history of exposure the case might have escaped notice.

I desire to express my indebtedness and thanks to Drs. F. T. Lord and W. J. Mixter for their coöperation and valued counsel, which made it possible to bring this case to a successful conclusion.

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- <sup>1</sup> Cushing and Sladen. *Jour. Exper. Med.*, 1908, Vol. x, p. 548.
- <sup>2</sup> Flexner, Simon: *Jour. A. M. A.*, Vol. lxi, Nos. 9 and 10, Sept. 1 and 8, 1917.
- <sup>3</sup> Chiray: *Abst. in Jour. A. M. A.*, Vol. lvi, 1916, p. 153.
- <sup>4</sup> Netter, A.: *Abst. in Jour. A. M. A.*, May 18, 1916, p. 1586.
- <sup>5</sup> Labbe, Ziafin and Cavallion: *Abst. in Jour. A. M. A.*, Vol. lvi, No. 18, Apr. 29, 1916, p. 1432.

### Book Reviews.

*Venesection.* By WALTON FOREST DUTTON, M.D. Philadelphia: F. A. Davis Co.

This monograph is intended as "a brief summary of the practical value of venesection in disease for students and practitioners of medicine." It is illustrated by several text engravings and three full-page plates, one in colors. The initial chapter presents a history of blood-letting by Dr. Fielding H. Garrison, read before the Medical History Club of Washington, D. C., on December 30, 1911; following this the author continues with a study of blood and lymph hematology, pathologic anthropology and the indications and technic of venesection. The remainder, about three quarters, of the work is an alphabetic discussion of the conditions in which venesection may be of value, from alcohol to viscosity of the blood. Though it is doubtless true that venesection is a procedure of therapeutic value within relatively narrow limits, its encouragement or extensive, injudicious employment is to be regarded with great caution. In many instances the shock of hemorrhage overbalances the benefit that may be derived from lowered blood pressure or removal of toxins. It is to be noted that in his description of transfusion the author still advocates the more complicated technic of direct vessel anastomosis, rather than the simplified and highly preferable method developed by Kimpton and Brown. The volume closes with a valuable, though incomplete, bibliography of selected titles.



# THE BOSTON Medical and Surgical Journal

Established in 1822

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, MARCH 7, 1918

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## ADVANCED RANK FOR MEDICAL OFFICERS.

THE Massachusetts State Committee has recently received from the Council of National Defense, Medical Section, at Washington, the following important letter relative to the Owen and Dyer bills, which deserves careful consideration and as much publicity as possible among the medical profession:

"1. The Owen bill, S. 3748, and the Dyer bill, H. R. 9563, creating advanced rank for officers of the Medical Corps, were introduced in the Senate and House of Representatives Tuesday, February 5. These two bills are identical and are similar to a bill passed some time ago, whereby advanced rank was granted to

medical officers in the Navy. According to the present law, the ranks for officers of the Medical Reserve Corps are first lieutenant, captain, and major. According to the Owen and Dyer bills, the ranks, in addition to those just noted, are lieutenant-colonel, colonel, brigadier-general, and major-general. The medical profession has long realized the importance of this advanced standing for physicians serving in the Army, and has felt the great value, to the health and welfare of soldiers, coming through orders given by medical officers of higher rank than those which are now accorded.

2. A recommendation involving the efficiency of the Army, because health is necessary to efficiency, given by a medical officer to a line officer of superior rank, fails to carry weight necessary for such an important recommendation. This has been the experience of many officers in the past, and has been responsible for this demand for advanced rank. The number in the regular Medical Corps now on active duty is 775. Volunteer physicians in the Medical Officers' Reserve Corps to the number of 12,855 are now on active duty. As you well know, physicians of the highest standing in the profession are now in the military service with the rank of major; the Army, therefore, losing the benefit of their experience and knowledge because of a lack of power to enforce their recommendations. Advanced rank carries with it this power.

3. The value of this patriotic service will be greatly enhanced by the early passage of these bills. If you feel, therefore, that more efficient service will be rendered after these bills become law, will you and your medical friends communicate directly with your senators and representatives, preferably by telegraph, using the 'night letter' service, if desired, giving them the benefit of your experience and advice. In matters medical, legislators are both willing and anxious to be guided by the wishes of the medical profession. Will you also present this information concerning these bills to the medical societies of your state and city for their consideration and action, such action to be in the nature of resolutions to be forwarded to senators and representatives as an evidence of the recommendation of the profession on this question?

By direction of DR. FRANKLIN MARTIN.

### Committee on States Activities.

*General Medical Board*—Edward Martin, Chairman; John D. McLean, Secretary; Joseph C. Bloodgood, John Young Brown, Karl Connell, George W. Crile, Richard Derby, John M. T. Finney, Joseph M. Flint, William J. Mayo, Stuart McGuire, Col. R. B. Miller, U.S.A., Col. Robt. E. Noble, U.S.A., Charles H. Peck, Hubert A. Royster, Frederick T. Van Beuren, Jr.

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**VOLUNTEER MEDICAL SERVICE CORPS.**

THE Council of National Defense on February 27 authorized the following statement:

For the purpose of completing the mobilization of the entire medical and surgical resources of the country, the Council of National Defense has authorized and directed the organization of a "Volunteer Medical Service Corps," which is aimed to enlist in the general war-winning program all reputable physicians and surgeons who are not eligible to membership in the Medical Officers' Reserve Corps.

It has been recognized always that the medical profession is made up of men whose patriotism is unquestioned and who are eager to serve their country in every way. Slight physical infirmities or the fact that one is beyond the age limit, fifty-five years, or the fact that one is needed for essential public or institutional service, while precluding active work in camp or field or hospital in the war zone, should not prevent these patriotic physicians from close relation with governmental needs at this time.

It was in Philadelphia that the idea of such an organization was first put forward, Dr. William Duffield Robinson having initiated the movement resulting in the formation last summer of the Senior Military Medical Association with Dr. W. W. Keen as president—a society which now has 271 members.

Through the Committee on States Activities of the General Medical Board, the matter of forming such a nation-wide organization was taken up last October in Chicago, at a meeting attended by delegates from forty-six states and the District of Columbia. This committee, of which Dr. Edward Martin and Dr. John D. McLean—both Philadelphians—are, respectively, chairman and secretary, unanimously endorsed the project. A smaller committee, with Dr. Edward P. Davis of Philadelphia as chairman, was appointed to draft conditions of membership; the General Medical Board unanimously endorsed the committee's report; the Executive Committee, including Surgeons-General Gorgas of the Army, Braisted of the Navy, and Blue of the Public Health Service, heartily approved and passed it to the Council of National Defense for final action; and the machinery of the new body has been started by the sending of a letter to the State and County Committees urging interest and the enrollment of eligible physicians.

It is intended that this new corps shall be an instrument able directly to meet such civil and

military needs as are not already provided for. The General Medical Board holds it as axiomatic that the health of the people at home must be maintained as efficiently as in times of peace. The medical service in hospitals, medical colleges and laboratories must be up to standard; the demands incident to examination of drafted soldiers, including the reclamation of men rejected because of comparatively slight physical defects; the need of conserving the health of the families and dependents of enlisted men and the preservation of sanitary conditions,—all these needs must be fully met in time of war as in time of peace. They must be met in spite of the great and unusual depletion of medical talent, due to the demands of field and hospital service.

In fact, and in view of the prospective losses in men with which every community is confronted, the General Medical Board believes that the needs at home should be even better met now than ever. The carrying of this double burden will fall heavily upon the physicians, but the medical fraternity is confident that it will acquit itself fully in this regard, its members accepting the tremendous responsibility in the highest spirit of patriotism. It will mean, doubtless, that much service must be gratuitous, but the medical men can be relied upon to do their share of giving freely, and it is certain that inability to pay a fee will never deny needy persons the attention required.

It is proposed that the services rendered by the Volunteer Medical Service Corps shall be in response to a request from the Surgeon-General of the Army, the Surgeon-General of the Navy, the Surgeon-General of the Public Health Service, or other duly authorized departments or associations, the general administration of the corps to be vested in a Central Governing Board, which is to be a committee of the General Medical Board of the Council of National Defense. The State Committee of the Medical Section of the Council of National Defense constitutes the Governing Board in each State.

Conditions of membership are not onerous, and are such as any qualified practitioner can readily meet. It is proposed that physicians intending to join shall apply by letter to the secretary of the Central Governing Board, who will send the applicant a printed form, the filling out of which will permit ready classification according to training and experience. The name and data of applicants will be submitted to an Ex-

ecutive Committee of the State Governing Board, and the final acceptance to membership will be by the national governing body. An appropriate button or badge is to be adopted as official insignia.

The General Medical Board of the Council of National Defense is confident that there will be a ready response from the physicians of the country. The Executive Committee of the General Medical Board comprises: Dr. Franklin Martin, chairman; Dr. F. F. Simpson, vice-chairman; Dr. William F. Snow, secretary; Surgeon-General Gorgas, U.S.A.; Surgeon-General Braisted, U. S. Navy; Surgeon-General Rupert Blue, Public Health Service; Dr. Cary T. Grayson, Dr. Charles H. Mayo, Dr. Victor C. Vaughan, Dr. William H. Welch.

#### STATE DEPARTMENT OF HEALTH DRUG BILL.

IN the issue of the JOURNAL for February 14, (page 231) we commented editorially on a bill (House No. 213), then pending before the Massachusetts General Court, relative to the sale and distribution of certain drugs, and aimed primarily at the surreptitious drug-store treatment of venereal diseases. This bill has now been withdrawn and for it has been substituted the following act "relative to the prescribing and compounding of certain drugs":

"Section 1. It shall be unlawful for any person, other than a physician registered under the laws of this commonwealth, to prescribe or recommend to any person any drugs, medicines or other substances to be used for the cure or alleviation of gonorrhea, syphilis or other venereal disease.

"Section 2. It shall be unlawful for any person to compound any drugs or medicines to be used for the cure or alleviation of gonorrhea, syphilis or other venereal disease, from any written or printed formula or order, or upon the prescription of any physician unless the said prescription is signed and dated by the said physician. No such prescription shall be received for filling more than fourteen days after its date of issue, as indicated thereon.

"Section 3. Any violation of the provisions of this act shall be punished by a fine of not more than one thousand dollars or by imprisonment in a house of correction or jail for a term not exceeding one year, or by both such fine and imprisonment."

The striking points of this new drug bill are that it forbids compounding medicines for the cure of venereal diseases except on a physician's prescription; that no prescription shall be received for filling more than 14 days after its date of issue; and that the use of printed formulae is forbidden. This prospective act, like the one which it replaces, may be regarded as an attempt, not only to protect the public, but to secure for them the most effective possible treatment for this group of ailments, and its passage is earnestly to be desired and advocated by the medical profession.

#### ANNUAL REPORT OF THE SURGEON-GENERAL, U. S. NAVY, 1917.

THIS comprehensive report contains very interesting and instructive information regarding the various branches of the Bureau of Medicine and Surgery of the Navy Department. A few paragraphs are devoted to important subjects, including the medical and dental corps, the American Red Cross, emergency hospital construction, Council of National Defense, aviation, the hospital corps, the nurse corps, schools, medical supply depots, hospital and ambulance ships, sanitary conditions ashore, naval hospitals, recruiting and health of the Navy; considering each subject in its relation to the Navy Department. The latter half of the report is given over to short tables illustrating the subtitles, and to long and detailed tables showing comparisons of diseases during several years and comparisons of mortality. These are followed by statistics which include a detailed statement of diseases and injuries for the calendar year 1916, the distribution among occupational groups, the deaths, invalidated from the service, surgical operations, dental operations, recruiting statistics, and the financial statement of the total cost of maintenance and average cost *per diem* for maintenance and subsistence at naval hospitals for the fiscal year 1917.

"For a considerable time prior to the declaration of war, and while yet this contingency seemed remote and improbable to many, this bureau instituted steps for preparation against such a development. The commanding officers of hospitals were directed to consider all the features of a possible situation calling for large increase in their equipment, and were directed to make tentative plans for installation of tents,

beds and cots to permit the maximum expansion. Plans were definitely completed for utilizing these institutions to their utmost capacity. Likewise, in the matter of stores, the bureau has been acquiring large quantities of drugs, surgical dressings, and appliances for issue from the various medical supply depots. The individual hospitals and ships also largely increased their reserve supplies, so as to be ready for any emergency.

In addition to the facilities thus provided and being provided in naval institutions, properly so called, the medical officers in command of the various naval hospitals have been busily engaged in organizing the naval hospital bases and arranging for adjuncts to them, such as civilian hospitals, municipal hospitals, private institutions, either to provide for evacuation on overflow of naval hospitals or to receive patients direct."

"Upon declaration of war the medical service to be rendered to all personnel of all forces was promptly organized in accordance with prepared plans, particularly with attention to naval districts and naval hospital bases. This organization consists of two divisions—dispensary service, general and hospital service, central.

The dispensary service, under the charge of the medical aid to the commandant of each naval district, was developed to serve the many outlying stations for patrol, aero, radio, and other forces. Dispensaries, or temporary sick quarters, were established, equipped, and manned with proper personnel at all places where the need existed.

The hospital service, under the charge of the medical officer in command of the naval hospital in each district, was developed upon a naval hospital base, the established naval hospital being surrounded by adjuncts in the form of temporary structures, tents, buildings converted to hospital purposes, United States Public Health Service or civil hospitals, to accommodate patients for whom, for any reason, there might be no accommodations within the naval hospital itself. The medical officers in charge of both divisions of medical work have perfected the general plans, and have made complete arrangements at all stations for adequate care and treatment of the sick and wounded should they be received in large numbers."

"Work has been rapidly pushed on all construction, and many of the emergency hospital buildings are equipped and fully ready for occupancy. The expansion of the hospitals has resulted in a great increase of work for the chief nurses of hospitals, and greater efficiency would result from the appointment of an assistant chief nurse at each hospital, with an increase of pay proportionate to the duties which would be indicated in this position. A field of activity which has been developed during the past year has been the class work in connection with the

instruction of hospital corpsmen, and especially qualified nurses have been appointed with a view to systematizing the method of instruction in the various naval hospitals."

"The work of the Sanitary Division extends to the field. An officer of the Public Health Service is detailed to each naval district, where his principal function is to study and direct sanitary measures in the regular naval establishments and their environments."

It is impossible to quote from this report sufficient of the valuable statements to show the distinct value of the publication. One can only recommend that, it is worthy of a careful perusal.

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#### THE NEW HEALTH COMMISSIONER OF MASSACHUSETTS.

IN the issue of the JOURNAL for February 21 we published comments on the loss the State had sustained in the return of Health Commissioner Allan J. McLaughlin to Washington, to become Assistant Surgeon-General in the United States Public Health Service, he having been loaned to Massachusetts in 1914 to inaugurate new methods, and to put our health department on a different footing. The Governor has nominated and the Council confirmed the appointment of Dr. Eugene Robert Kelley, who is now the commissioner, being advanced from the position of director of the Department of Communicable Diseases in the department. Dr. Kelley was a graduate of the Medical Department of the Johns Hopkins University and an interne at the Carney Hospital. Thence he went to the State of Washington to become assistant health commissioner and then commissioner of health, so that he assumes now a similar office in Massachusetts. That he has shown commendable energy in the conduct of the Department of Communicable Diseases is common knowledge, and there is every reason to believe that he will continue the policies of his predecessor, thus maintaining the high standards and best traditions of state service to the public health, for which Massachusetts has long been famous. The Governor and the citizens of the State are to be congratulated on this wise appointment.

## MEDICAL NOTES.

## DISTRIBUTION OF BLANK FORMS FOR THE NOTIFICATION OF CASES OF SYPHILIS AND GONORRHEA.

—Owing to freight embargoes and the seizure of paper by the U. S. Government designed for the printing of certain of the forms to be used in notifying the State Health Department of cases of syphilis and gonorrhea, the printer was unable to fill his contract to supply this Department with the full quantity of the necessary forms in time to distribute them to physicians throughout the Commonwealth prior to February 1, 1918, when these diseases became reportable. As quickly as the various lots of the necessary supplies are delivered to this office, however, they are sent out, and it is hoped that by the fifteenth of March all registered physicians in the State will have received the requisite blank forms for the handling of reports of cases of syphilis and gonorrhea.

EUGENE R. KELLEY, M.D.,  
*Commissioner of Health.*

**PREVALENCE OF TUBERCULOSIS IN THE UNITED STATES.**—On February 25 the National Association for the Study and Prevention of Tuberculosis issued in New York a statement to the effect that within the next two years at least 50,000 more tuberculosis hospital beds will be needed in the United States to make possible the adequate control of the disease under war conditions. At present only 43,000 beds are available for this purpose in the entire country.

“The estimate is based on a revised conception of the prevalence of the disease, as the result largely of the examination of recruits and drafted men for our new Army and Navy. Until recently it was estimated that for every death from tuberculosis in the country there were five active cases of the disease. It is now believed that the true ratio is twice or three times as great. Instead of about 1,000,000 active cases in the country, there are probably between 2,000,000 and 3,000,000.

These results are corroborated, says the statement, by unofficial deductions from the records of the first year of the community health demonstrations being carried on at Framingham, Mass., by the National Association. About 5000 persons, or about one-third of the population of Framingham, have been rigidly examined, including all classes, and out of these approximately 160 definite cases have been discovered.

The average annual death list in Framingham from tuberculosis is 15. If not another case of the disease should be found on examining the rest of the population, this would give a ratio of

disease to death twice as large as formerly estimated.”

**AWARD OF VICTORIA CROSS.**—In the *Lancet* is noted the recent award of the Victoria Cross to the late Capt. John Fox Russell, M.C.R.A.M.C., attached to the Royal Welsh Fusiliers, “for most conspicuous bravery displayed in action until he was killed. Captain Russell repeatedly went out to attend the wounded under murderous fire from snipers and machine guns, and in many cases, where no other means were at hand, carried them in himself, although almost exhausted. He showed the highest possible degree of valor.”

**BRITISH BIRTH AND DEATH RATES.**—On February 21 were published in London the vital statistics of England and Wales for 1916, showing a reduction of 4½% in the marriage rate that year, and the lowest death rate ever recorded for children under one year of age.

“There was in 1916 a notable increase in the proportion of marriages of young widows under 30 years of age, which greatly increased result is due to the war. The proportion of the total population to the birth rate was 20.9 per 10,000 living. The reduction in births amounted to only 12%, whereas in Germany the fall is reported to have been 40% for the two years 1915-1916, and in Hungary 56%. In England and Wales the births of males numbered 402,137, of females 383,383. The report states it will be possible only after the war to determine to what extent the old idea that war conditions lead to male conceptions, has been justified by the huge experiment now in progress. The excess of births over deaths was 277,303. The number of fatal casualties incurred by English and Welsh troops during the year, says the report, must have been very much lower than 277,303, so the increase in population must have continued. German statistics record 1,331,000 deaths in 1916—apparently exclusive, at least, of the great majority of fatal war casualties—against 1,103,000 births. The Hungarian figures are for deaths not in action, 428,057, against 333,551 births.”

## WAR NOTES.

**MEASLES QUARANTINE.**—Five cases of measles among members of the Coast Artillery Guard units at the Waterships Branch of the Springfield Armory have caused the placing of the guard camp under strict quarantine.

**TREATMENT OF SHELL SHOCK AT COLUMBIA UNIVERSITY BASE HOSPITAL.**—Public announcement has been made that the United States Army Men's Hospital No. 1, better known as Columbia University Base Hospital, has already

harbored 650 patients. Plans are under way so that 5000 men may receive treatment there at one time. An experiment in the non-medical treatment of shell shock is under way. This consists of a concert which is designed to show the effect of music upon men whose nerves have been shattered by the high-tension strain of trench life, and who have thus been brought to any one of that variety of conditions described as "shell shock," although the term is not confined to the conditions brought on by the explosion of shells.

#### BOSTON AND MASSACHUSETTS.

**JOHN WHITE BROWNE SCHOLARSHIP AT HARVARD.**—A new medical scholarship has been established at Harvard under the will of Rebecca A. Greene, which is to enable a young man of unusual promise to pursue his research investigations for one year at Harvard or elsewhere. Eighteen thousand and five hundred dollars was given for this purpose in memory of John White Browne, who was a member of the Harvard class of 1830.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending February 23, the number of deaths reported was 298, against 295 last year, with a rate of 19.81, against 19.91 last year. There were 50 deaths under one year of age, against 31 last year.

The number of cases of principal reportable diseases were: diphtheria, 66; scarlet fever, 27; measles, 143; whooping cough, 35; typhoid fever, 2; tuberculosis, 59.

Included in the above were the following cases of non-residents: diphtheria, 8; scarlet fever, 5; measles, 1; typhoid fever, 1.

The total deaths from these diseases were: diphtheria, 11; scarlet fever, 1; measles, 2; whooping cough, 2; tuberculosis, 29. Included in the above were the following non-residents: diphtheria, 7; whooping cough, 1; tuberculosis, 2.

**MASSACHUSETTS STATE NURSES' ASSOCIATION.**—The midwinter meeting of the Massachusetts State Nurses' Association was held Saturday, February 16, 1918, in the Assembly Hall of the Walker Building, 525 Boylston Street, Boston. In the morning the Massachusetts State League of Nursing Education met at 10.30 and the Private Duty Nurses' League met at 12.30. The afternoon meeting was in charge of the State

League of Nursing Education, Miss Emma M. Nichols, R.N., presiding. Two papers were presented, "Plane of Training Schools in the Nursing World" and "Training of Student Nurses."

**IN HONOR OF DR. McLAUGHLIN.**—A dinner was given Thursday evening, February 21, in honor of Dr. Allan J. McLaughlin, who has resigned as commissioner of health in Massachusetts, in favor of an appointment as Assistant Surgeon-General in charge of Division of Interstate Quarantine in Washington. Dr. McLaughlin was assigned to Massachusetts by the United States Public Health Service four years ago, to direct the reconstruction of the State Department of Health from an unpaid board to the more modern system of public health administration, which places the functions of the State Department of Health under the control of one executive with an advisory council.

**HOSPITAL BEQUEST.**—By the will of the late Mrs. Maria Louise Harlow Peirce, a bequest of \$100,000 is made which is to be used as a fund for the erection of a hospital in Middleboro, Mass. This hospital is to be known as St. Luke's Hospital and the fund is to go under the designation. "The Harriet Rice, Judith Peirce and Nabby Sproat Peirce Memorial Fund."

#### Obituary.

##### HARRY MADISON CUTTS, M.D.

DR. HARRY MADISON CUTTS died of pneumonia at his home in Brookline, February 21, 1918. He was a native of Washington, D. C., where he was born September 4, 1858, the son of Richard D. and Martha Jefferson Hackley Cutts. In 1880 he was graduated from Princeton with the A.B. degree and in 1883 from Harvard Medical School, Princeton giving him an A.M. the same year.

From 1885 until 1887 Dr. Cutts practised his profession in Washington, and since then he had lived and practised in Brookline. While in Washington he was, in 1884, superintendent of the Garfield Memorial Hospital. In his professional career Dr. Cutts had served as surgeon for the Naval Brigade, M.V.M., and at the time of his death he was medical examiner of Norfolk County. He was a member of the Massachusetts Medical Society and was the medical mem-

ber of the draft selection board in Brookline, where he belonged to the Thursday Club and the Country Club. He was married in Randolph, on November 18, 1891, to Marion Belcher, by whom he is survived, as he is by a daughter, Dorothy Madison Cutts, and a son, George Belcher Cutts, who is in service in the Aviation Corps.

### Miscellany.

## REHABILITATION OF DISABLED SOLDIERS AND SAILORS.

### I.

THAT 100,000 out of every 1,000,000 soldiers sent overseas will return to the United States during the first year of fighting, and that 20,000 of these will need some kind of vocational re-education or rehabilitation, is the estimate made by the Federal Board for Vocational Education in a report just published as Senate Document 166.

"Long before the close of activities in the summer of 1918, the return of men will begin, and vocational re-education must start with the first men sent back, and must be developed as the number of men in hand for training increases," declares the report. "The development of facilities for undertaking vocational re-education must, in fact, anticipate the return of the men, since adequate provision cannot be improvised after the men are actually in hand for training."

A comprehensive federal system for the re-education and placement in wage-earning occupations of every disabled soldier and sailor is presented by the federal board. This plan involves a central administrative agency at Washington, the coördination with that agency of every federal and state agency concerned and with similar public, semi-public and private agencies, the establishment of "curative workshops" for the treatment of war cripples, together with a complete system providing for subsistence and pay during the period of re-education.

Basing its opinion on foreign experience, the report declares that "vocational rehabilitation cannot be regarded as costing the community, except temporarily, anything whatever. The disability of the soldier or sailor is an economic

handicap, reducing productive power. Unless the men are vocationally re-established, and to the extent that they are not completely re-established, the economic loss to the community will be cumulative during a long period of years. Even a slight increase in vocational capacity, as a result of vocational training initiated during the period of convalescence, will result in an economic gain which, also, will be cumulative over a long period. This aggregate cumulative gain will certainly exceed any expenditures for vocational rehabilitation."

The increase of the earning power of the handicapped man, thus rendering him economically independent, is the ultimate object of this program.

The plea is made that "all the experience and all the special equipment required for emergency war work will be needed to provide for similar work in the vocational rehabilitation of men disabled in factories and workshops, of the victims of accident in all dangerous employments, and of the thousands of otherwise injured and crippled persons thrown upon the community each year. The number of such persons in normal times greatly exceeds the capacity thus far developed for their vocational rehabilitation.

In addition to the above, it discusses methods of financing, organizing, and administering a national system of vocational rehabilitation; foreign experience and legislation are reviewed; and the proceedings of an inter-departmental conference held on the subject in Washington are summarized, together with suggested legislation.

### II.

The vocational and educational problems involved in the rehabilitation of disabled soldiers and sailors are analyzed and discussed by the Federal Board for Vocational Education in Senate Document 167, just published under the title, "Rehabilitation of Disabled Soldiers and Sailors—Training of Teachers for Occupational Therapy."

Emphasis is placed on the immediate and pressing demand for the training of teachers of occupational therapy to take care of the handicapped men on their return from France. It is estimated that for every 1,000,000 men overseas, a minimum of 1200 teachers will be needed. What must be the qualifications of these teachers in view of the experience of the belligerent



countries; how they may be trained; what problems are to be met; and how they are to be met in the course of vocational rehabilitation; the social and economic aspects of rehabilitation; and the need for a national system for the rehabilitation of the maimed and crippled in industry, as well as in war, are the main topics of the bulletin. The document is written by Elizabeth G. Upham, under the direction of Charles H. Winslow, assistant director for research of the Federal Board.

The emergency program outlined in the report is summarized as follows:

The returned disabled men are divided into four classes: 1, those who are permanently invalided; 2, those who are able to work, but cannot engage in competitive occupations; 3, those who must learn new occupations in the light of their handicaps; 4, those who are able to return to their former occupations. About 80% of all the disabled fall into the fourth group, and about 20% into the third group. The first two groups are relatively small.

For Group 1 the treatment prescribed is "invalid occupations," which are occupations that help pass the time and save the patient from brooding. For Group 2, those who will, in all probability, be unable to compete in any line of work, simple occupations are prescribed, to be carried on under the guidance of occupational therapists. Such occupations as wicker furniture-making, chair-caning, toy-making and semi-trades, will be taught these men.

For the 20% who must learn new occupations, a more elaborate course of rehabilitation is suggested. This will include simple occupations such as are taught to the men of the second group, followed by courses in general education wherever necessary, and followed in turn by prevocational education, that is to say, elementary vocational education; and, lastly, by vocational education in whatever line is best adapted to the qualifications and handicap of the man.

A similar curriculum is proposed for the 80% who will probably be able to return to their old occupations. Under the lead of the occupational therapist, the patient will be gradually taught simple occupations, his general education will be "brushed up," and the deficiencies supplied, and he will be re-educated so as to resume his former trade in spite of his handicap.

The Federal Board presents in this bulletin an outline of an emergency course covering eight

weeks for the training of teachers to handle all four groups of disabled men. It is expected that a fraction of the disabled men themselves will serve as instructors. Nurses and teachers of arts and crafts will be available for the invalid occupation work; trained and selected women of education, with previous experience in the arts, crafts and the "semi-trades," will be drawn on to teach simple occupations to Group 2. In addition to these, there will be need in Groups 3 and 4 of vocational teachers, preferably men, and men and women teachers, in general educational subjects, instructors in manual training, commercial subjects, mechanical drawing, drafting, etc. Teachers of each group should have had practical experience in hospitals or institutions, and it is recommended that teachers in Groups 3 and 4 should have experience in the same line of work in the military hospitals of Canada.

That every dollar invested by the Government in the vocational rehabilitation of disabled soldiers and sailors will bring handsome returns in national efficiency is maintained in the report. "If the war should finally end in economic exhaustion," says the report, "that nation will ultimately triumph which is best able to use over again her men. It is claimed that Germany uses 85 to 90% of her disabled men back of the lines, and that the majority of the remaining 10 to 15% are entirely self-supporting. Belgium, whose depletion has been the greatest, was the first nation successfully to use over again her men. Not only has the large Belgium re-education center of Port Villez been self-supporting, but in addition, it has paid back to the Belgian Government the entire capital cost of installation.

"Economic necessity has made possible the results achieved in Belgium. For the other nations, not so hard pressed, the rehabilitation of the disabled and the strengthening of the vitality of the civil population may be an important and perhaps a determining point in their economic future. . . It is certain that our own economic future depends, to a large extent, upon the rehabilitation of those disabled both in war and industry."

The bulletin discusses at length the possibilities of development of occupational therapy and the equipment needed for all the groups described. Suggested blanks for keeping the records in the curative workshops and for hospital registration are included.

## VENEREAL DISEASE AS A MENACE TO THE NATION.

THE American Social Hygiene Association has recently issued the following brief, showing the seriousness of the problem of venereal diseases and their relation to the war, and the responsibility of civil communities for conditions in the Army. The Council of National Defense urges public officers and citizens of the United States to employ every means possible in the repression of prostitution and the control of venereal disease, for the following reasons:

First, because we must prevent such conditions as have developed in Europe since the beginning of the war.

(1) "The number of syphilitics in the Army must certainly be several hundreds of thousands . . . Since the war began, a total equivalent of sixty divisions have been temporarily withdrawn from the fighting for venereal diseases (Vienna report).—*Journal of the American Medical Association*, March 10, 1917, Vol. 68, No. 10, p. 814.

(2) "During the first eighteen months of war one of the great powers had more men incapacitated for service by venereal disease contracted in the mobilization camps than in all the fighting on the front."—*Social Hygiene*, Vol. 3, No. 2, p. 205.

(3) "In the war zone of France there has occurred an alarming increase of venereal disease, both amongst the soldiers and the civilian population."—*The Medical Officer* (London), No. 499, March 3, 1917.

(4) "The failure of the . . . Government to protect their soldiers from these evils (sexual vice and alcoholism) is the gravest error that the Government has committed; for these vices have proved more destructive to the . . . people since August, 1914, than all the . . . artillery, rifles, hand grenades, poisonous gases and fire blasts. Those killed by shot and shell transmit no poison to their families and descendants—the victims of alcohol and prostitution do."—From a letter by President Emeritus Charles W. Eliot of Harvard University, quoted in the *Survey* of Sept. 8, 1917.

(5) "Thousands upon thousands are withdrawn from the fighting army for weeks. But they are not only missed as fighters; they also cause expense and great obstruction through their transportation back home, through the necessity of establishing hospitals for thousands who were not wounded by the enemy. They burden the doctors so necessary for the care of the wounded. . .

"But the very worst part of the venereal diseases is not the diseased condition immediately following infection, but the ailments frequently developing in later years, when the war is long

past and the old infection already forgotten, and the transmission of the disease to the family after the return of the troops to their homes."—Prof. Albert Neisser, *Frankfurter Zeitung*, January, 1915.

Second, because serious conditions have already developed in the United States Army, due largely to conditions in civil communities.

(1) "At one National Guard Camp, 502 new cases of venereal disease were reported in one week."—*Official Bulletin*, Nov. 20, 1917, p. 6.

(2) It was found that most of the cases at one large cantonment originated, not in the camp or near the camp, but in civil communities from which the men came or through which they passed on the way to camp.

(3) "In the case of all the troops on the border, a vastly larger proportion of venereal disease was contracted before reaching the border than was contracted afterwards."—*Social Hygiene*, Vol. 3, No. 2, p. 220.

Third, because the War Department has asked our aid.

(1) "Our responsibility in this matter is not open to question. We cannot allow these young men . . . to be surrounded by a vicious and demoralizing environment, nor can we leave anything undone which will protect them from unhealthy influences and crude forms of temptation."—Secretary of War Baker in his letter of May 26, 1917, to Governors of all States.

(2) "We are not going to be able to obtain the conditions necessary to the health and vitality of our soldiers, without the full coöperation of the local authorities in the cities and towns near which our camps are located or through which our soldiers will be passing in transit to other points."—*Ibid*.

Fourth, because venereal diseases result in the infection of innocent women and children.

(1) "No disease has such a murderous influence upon the offspring as syphilis; no disease has such a destructive influence upon the health and procreative function of women as gonorrhea. . . Inherited syphilis constitutes a powerful factor in the degeneration of the race."—Prince A. Morrow, M.D.: *Social Diseases and Marriage*, Chap. 1.

(2) "All previous war experience shows an increase of venereal disease. . . When peace comes there is the danger of grave and widespread dissemination of these diseases. It is for that, that we must be prepared, and there is not time to be lost."—Report of National Conference for Combating Venereal Diseases (London). *Social Hygiene*, Vol. 3, No. 2, p. 235.

Fifth, because prostitution is not a "necessary evil."

(1) "Sexual intercourse is not necessary to preserve health and manly vigor."—Moss: *Manual of Military Training*, Section 1466, p. 522. See also statement signed by Walter B. Cannon, M.D., Harvard University; William H. Howell,

M.D., Johns Hopkins University; and 355 other foremost medical authorities in the United States.—M. J. Exner, M.D.: *The Physician's Answer* (Association Press, New York), pp. 14, 24-51.

Sixth, because the "restricted district" and other attempts to regulate prostitution, have proved ineffective.

(1) See Flexner: *Prostitution in Europe*, pp. 175-6, and the reports of Vice Commission in Chicago, Minneapolis, Syracuse, Philadelphia and many other cities.

Seventh, because repression is the only feasible method.

(1) "The only practical policy which presents itself in relation to this problem is the policy of absolute repression, and I am confident that in taking this course the War Department has placed itself in line with the best thought and practice which modern police experience has developed."—Secretary of War Baker in his letter of August 14, 1917, to Mayors and Sheriffs.

(2) "This policy involves, of course, constant vigilance on the part of the police, not only in eliminating regular houses of prostitution, but in checking the more or less clandestine class that walks the streets and is apt to frequent lodging houses and hotels."—*Ibid.*

Eighth, because it will be better to handle the situation locally and thus make military interference unnecessary.

(1) One commandant issued orders forbidding all use of intoxicating liquor and all patronizing of immoral resorts. Every woman who got off a train was watched until her business was known. If necessary, she was put out of the vicinity.—*Social Hygiene*, Vol. 3, No. 1, p. 155, also Association Press (New York), April, 1917, p. 379.

(2) "If places of bad repute spring up outside the five-mile limit, but fairly accessible to the camp, I shall not hesitate to insist upon their elimination."—Secretary of War Baker in his letter of August 14, 1917, to Mayors and Sheriffs.

## TETANUS IN BRITISH HOME MILITARY HOSPITALS.

THE *British Medical Journal* has recently published the following analyses of cases of tetanus treated in home military hospitals. The first covers November and parts of October and December, 1916, and deals with the first one hundred completed cases since the latest previous analysis was made.

"During the four periods analyzed the rate of mortality has steadily gone down. In the

first group the mortality was 57.7%; in the second 49.2; in the third, 36.5; of the present series of 100, 69 recovered—mortality 31%. The ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals was, roughly, six times as high in September, 1914, as it was two months later; and it remained at or about the lower level until the end of 1916. This fall in ratio was undoubtedly due to a great extent to the introduction of prophylactic injections of antitetanic serum, which took place about the middle of October, 1914.

The present series shows once again that the shorter the incubation period the greater the mortality rate, and vice versa. There were only twelve cases with a short incubation period (that is, up to ten days), and sixty cases with an incubation period of more than twenty-two days; the shortest incubation period was seven days, and the longest 190. Since the beginning of the war there has been a diminution in the number of cases with short incubation periods, and a corresponding increase in the number of cases with long incubation periods. This is a measure of the action of the prophylactic inoculation of antitoxin.

Sir David Bruce points out that it is sometimes by no means easy to decide whether a case is one of localized or generalized tetanus. He defines general tetanus as that in which spasticity or rigidity occurs in muscles distant from the site of wound, trismus being the most common initial symptom in this form; in local tetanus the spasticity or rigidity is confined to the muscles in the neighborhood of the wound. He looks on local tetanus as a much modified variety of the original disease, or even as a new type due to the action of the prophylactic injection. In general tetanus the toxin molecules may be pictured as gaining entrance to the circulation, and so reaching all parts of the nervous system. Of the 100 cases under review, 61 could be placed in the general, and 28 in the local group; in the remainder there was doubt. In the 61 cases of generalized disease there were 21 deaths—mortality 34.4%. All the cases of localized tetanus recovered. Trismus was recorded in 54 of the generalized cases, opisthotonos in 17.

With regard to operative interference, the Tetanus Committee advises that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should always be given; further, they consider it probably safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there are other and imperative reasons for immediate operation. When the symptoms of the tetanus have subsided, and the tissues are flooded with antitoxin, then the wound can be opened up and searched for foreign bodies or hidden collections of pus and tetanus bacilli.

Of the 100 cases, 61 were noted as having received a prophylactic injection in France; of

these 51 recovered—mortality 16.4%. Of the remaining 39 cases, 22 were not recorded to have had prophylactic treatment, though probably many received it; of these 12 recovered—mortality 40.5%. Of the remaining 17 patients who had no prophylactic injection of any kind, 6 recovered—mortality 64.7%. The number of patients treated with antitetanic serum after the onset of symptoms was 98, of whom 68 recovered—mortality 30.6%. Of the two cases which did not receive therapeutic treatment with serum in England, one recovered and the other died.

Once again the analysis of the cases furnishes no evidence either for or against the intrathecal route. It will be remembered that in the first year of the war the figures seemed to show that this route showed advantage over others. Analysis of the figures relating to dosage likewise furnishes no useful deduction as to the curative influence of this factor."

The second analysis, being the fifth in the entire series, covers the remainder of 1916 and the first quarter of 1917.

"The numbers of cases of tetanus dealt with in the five periods, and the rates of mortality, are given in the following table, which speaks for itself:

ANALYSIS	No. OF CASES	RECOVERED	DIED	MORTALITY PER CENT.
1914-15 .....	231	98	133	57.7
1915-16 .....	195	99	96	49.2
Aug.-Oct., 1916 .....	200	127	73	36.5
Oct.-Dec., 1916 .....	100	69	31	31.0
Dec., 1916-Mar., 1917	100	81	19	19.0

In the second analysis the statement was made that 'early treatment should be striven for, and if this were done and the antitoxin applied thoroughly, one would not despair of reducing the mortality to, say, 20%, instead of 50%, at which it stands for the past year.' It will be seen that this ambition has been more than realized so far as the returns of the last 100 cases are concerned. This large reduction in the death rate is most satisfactory, but Sir David Bruce wisely refrains from expressing an opinion as to whether it has been due to the specific treatment or to one of the several other factors involved. Whatever be the cause—the prophylactic dose of serum, better surgical treatment, quicker diagnosis, more thorough therapeutic treatment—the result is gratifying.

Referring to the factor of surgical treatment, it is pointed out that if this could be made entirely successful, by cleansing and sterilization of wounds at the outset, there would be no more cases of tetanus; but while there is some evidence of an improvement in surgical technic much remains to be done. The present analysis repeats and brings up to date figures showing the number and distribution of cases of tetanus treated in home military hospitals since the beginning of the war.

Among the last 100 cases we find that where the symptoms of tetanus appeared within ten days of receiving the wound, the mortality was 40%; where they appeared between the eleventh and twenty-fourth day, it was 25%; in the remaining 66 cases, with an incubation period greater than twenty-five days, the mortality was 13.6%. In one patient the incubation period was stated as 786 days; but this for various reasons is regarded as a doubtful case which should be ignored for statistical purposes, although, as Dr. Goadby has shown, the tetanus bacillus may remain for a long time quiescent at the site of old wounds. Disregarding this case, the longest incubation was 365 days, and the shortest three days.

Since the beginning of the war the average incubation period has been steadily lengthening. This should probably be attributed in the main to the prophylactic injection of antitoxin. In the first year of the war 47% of cases had a short incubation period; in the last analysis this had fallen to 10%. Correspondingly, the percentage of cases with a long incubation period has risen from 6.4 to 69.

In our summary of the last analysis (September 15, 1917) we printed Sir David Bruce's working definitions of general tetanus and local tetanus. In the present series it was found on examination that 81 cases could be placed in the general group, and 19 in the local group. Among the former there were 58 recoveries and 23 deaths, giving a mortality of 28.3%. All the cases of localized tetanus recovered. There is no evidence to support the view that the presence of a fractured bone complicating the wound is a source of danger heightening the death rate from tetanus.

In six of the cases tetanus is reported to have followed an operation, and one died. In none of these was a prophylactic inoculation of antitetanic serum given before the operation, although the advice of the Tetanus Committee is that this should always be done. As in each preceding series of cases, the mortality among patients who had received no prophylactic injection in France was considerably greater than among those so protected. It should be noted here that the present policy advocated by the Tetanus Committee of the War Office, is that four prophylactic injections should be given to every wounded soldier at intervals of seven days, but in periods of hard fighting this might sound a counsel of perfection.

The whole of the 100 cases under review received therapeutic doses of antitetanic serum; in the preceding series all but two were so treated. The considerable reduction in the mortality, from 31 to 19%, would not appear, therefore, to be due to this factor, and, as Sir David Bruce states in his conclusions, the evidence as to the therapeutic effect of antitetanic serum is still inconclusive. Once again the figures furnish no case, either for or against the intrathecal route

as compared with other methods of injection; similarly, from the figures relating to dosage no useful deduction can be drawn."

### AMERICAN HOSPITALS AND SURGEONS IN FRANCE.

THE *Lancet* has recently published the following editorial comment on the work already accomplished by American hospitals and surgeons in France since the outbreak of the European War. The eulogistic character of this comment will be gratifying to American professional pride and should be a stimulus to higher endeavor on the part of every member of the profession, whether or not in the military medical service, during the remainder of the war.

"The reference to the American medical units made by Sir Donald MacAllister in his presidential address to the General Medical Council calls to mind that it is not this year that members of the medical profession in the United States of America began to play a part in the war so far as the important section of it, conducted by the British Expeditionary Force in France, is concerned. The American Hospital outside the Neuilly gate of Paris, which at one time worked for the British as well as for the French forces, opened its doors within the first few weeks of the war; about the same time also an American motor ambulance team, which included a certain number of American medical men, also began to work, and not very many months had passed before more than one medical man of American extraction and education had successfully volunteered for service in the commissioned ranks of the Royal Army Medical Corps itself. It was also well before the first year of the war was over that a plan was working under which two university centres in the United States undertook to supply the medical staffs of not less than two base hospitals. The teams engaged to serve for not less than six months, a portion of them then returning home and being replaced by new arrivals. They were American units in the sense that the ward medical officers, surgical experts, and officers in charge of divisions, as also the officers in charge of special departments and the nurses, were drawn from the United States, while their administrative officers and the other ranks were supplied by the Royal Army Medical Corps. One of these hospitals is still at work alongside similar base hospitals more purely American in character which got to work this year. Of these there are about half a dozen, and though they bear the numbers of the British General Hospital units which they replace and whose habitations they inherited, they are all complete American units in the sense that each of them was formed in the United States as part

of the general arrangements made by the American Red Cross Society in anticipation of the possible extension of the American army. At first there were only two of them, but now they are about fifty in different parts of the United States, all raised to represent different localities or institutions. The first two units, representative of Harvard and the Western Reserve Universities, sailed for Europe within about five days of the time they actually received word from the Balfour Commission that their services would be valuable. These two first units were respectively organized by Professors Harvey Cushing and Crile, both of whom had previously in turn played a part in the affairs of the American hospital at Neuilly. The latter was for long worked on the principle that some distinguished surgeon formed his own team and brought it over ready to take charge of a section of the work for a period of three months; and the existing hospitals, to which reference has been made, seem to be constituted on the same principle but without the time limit. All of them have been formed with the idea that when the moment comes they will step into their places as units of the medical departments of the American army, and each has at its administrative head an officer belonging to the medical corps of the standing army of the United States. The other officers, who take complete charge of the professional work, are medical officers of the Reserve Corps (M.O.R.C.), and do their work under an officer who is always a more or less well known medical man in America, and bears the title of Director. He also holds rank as a major in the American army, the other officers being commonly lieutenants and sometimes captains. In the American army, as in the French, the nominal rank of officers is commonly a grade or two lower than in our own. There are also usually attached to each of these American units in France two officers of the Royal Army Medical Corps, one of whom acts as registrar, and assists the administrative commanding officer in respect of the returns required by the British authorities, and the other as quartermaster. There are at present American registrars and quartermasters also. There are also a few R.A.M.C. of other ranks at some of these units. With these exceptions, the whole of the personnel is drawn from the United States. They work under the orders of the D.D.M.S. of the area in which they happen to be placed (they are distributed over the principal British bases in France) and enjoy the advantage of the assistance of the consulting surgeons and physicians attached to the bases concerned. Most of them seem to fly the Stars and Stripes, but otherwise there is nothing to differentiate them from the other hospital units—British, Australian, New Zealand, Canadian, and South African—serving with the British Expeditionary Force, except in respect of the uniforms of their officers, nurses, and other ranks. Nor do they differ in their internal

arrangements as a whole, though they do differ materially in one important factor. They are strongly staffed on paper as compared with British hospitals of the same nominal size, and extremely strongly staffed in practice, since British hospitals in France seldom have more than about two-thirds of their official establishment strength. The United States officers in military hospitals are by no means the only American medical officers now in France. A large number of others not attached to hospitals have arrived in France during the past few months, and have been distributed among the armies at field ambulances, casualty clearing stations, and elsewhere. Whether the base units mentioned as well as the unattached medical officers will be withdrawn when the time comes for the American army to take its place in the line does not appear yet to be settled. Meantime the hospital units in particular are playing an exceedingly useful part, and the American medical officers, as a whole, are gaining an experience which will prove invaluable when the war for the American army really begins. Several of the American base hospitals are understood to have contributed surgical teams to the casualty clearing stations during the recent heavy fighting, and one American medical officer attached to a field ambulance is rumored to have been recommended for the Victoria Cross."

#### RED CROSS WORK WITH THE UNITED STATES ARMY.

ON February 22, the Bureau of Public Information at Washington issued the following statement defining the activities of the Red Cross in conjunction with the United States Army during the present war:

The statement setting forth the duties of the Red Cross follows, in full:

"1. To distribute sweaters, mufflers, helmets, socks, comfort kits, etc., and to receive the assistance and coöperation of all officers in making the distribution fair, equal and where most needed.

2. To render emergency relief of every kind upon the request or suggestion of an officer in charge. All officers are instructed to avail themselves of this assistance whenever, in their opinion, advisable. Officers should be none the less diligent in attempting to foresee the needs of their department in order that they may be supplied through regular Government channels. All such requests must be approved by the commanding officer, who will cause a record to be kept of all such articles.

3. To relieve the anxiety and to sustain the morale of soldiers who are worried about their families at home and to promote the comfort and well-being of these families, authority is given to the American Red Cross to place one or more

representatives of the home service bureau of the department of civilian relief at the service of the men of each division of the army wherever located. The soldiers should be informed through official orders of the presence of such representative or representatives and that the Red Cross is able and willing to serve both soldiers and their families when in need of any helpful service. This representative and his assistants will be accredited to the division commander and will be subject to authority and to military laws and regulations. This representative of the Red Cross will have the status of an officer in the army and will be provided quarters when available. Such assistants and clerks as may be necessary will be provided by the American Red Cross and must be males. These assistants and clerks, if any, will have the status of non-commissioned officers. All reports and correspondence of this officer will be subject to censorship of the commanding officer.

4. To conduct canteen service stations for furnishing refreshments to soldiers when travelling through the country, to furnish emergency relief to the sick and wounded when en route and to see that they are conveyed to a hospital when necessary and requested by the commanding officer. All commanders of troop trains are authorized to avail themselves of it whenever, in their opinion, advisable.

5. A representative of the American Red Cross may be attached to each base hospital to furnish emergency supplies when called upon, to communicate with the families of patients, to render home service to patients and such other assistance as pertains to Red Cross work. The representative of the Red Cross so assigned, with his assistants, will be accredited to the commanding officer of the base hospital and will be subject to the same regulations as to status, privileges, assistants and censorship, as provided in preceding paragraph applying to the representatives of the Red Cross assigned to divisions.

6. In order to render the above outlined service to the best advantage, the accredited chief officer representing the American Red Cross at division headquarters will be a field director.

7. Officials of the Red Cross assigned on duty with the military establishment, as outlined above, will be required to wear the regulation uniform of the American Red Cross, together with the insignia, etc., as approved by the Secretary of War.

8. The commanding officers of all other encampments or organizations to which Red Cross representatives may be assigned in accordance with this order, are authorized to furnish to the American Red Cross anything that they may request, within reason, such as warehouses, offices, light, heat, telephones, etc., in order to enable them to properly carry on the work for which they are assigned."



## MEDICAL MATTERS IN PALESTINE.

THE *British Medical Journal* has recently published the following extract from a despatch of General Sir Archibald Murray, describing the British campaign in Palestine from March to June, 1917. The despatch gives the story of the two attacks on Gaza (March 26 and April 17):

"On the first occasion the enemy was severely punished, 950 Turkish and German prisoners being taken and casualties, estimated at 8000, inflicted. The British casualties were under 4000. On the second attack the British casualties amounted to some 7000. Both attacks failed to reach Gaza, but a certain amount of ground was won and retained. Sir Archibald Murray says that no praise can be too high for the gallantry and steadfastness of the cavalry, infantry, artillery, Royal Flying Corps, and all other units which took part in the two battles for Gaza. With regard to the medical services he writes as follows:

"The health of the troops has throughout been singularly good. All branches of the medical services under Surgeon-General J. Maher, C.B., deserve the highest commendation for their successful work at the front, on the lines of communication, and in the base hospitals. The presence in the force of a number of civil medical consultants, who have so patriotically given their services, has been of the very greatest value, and they have worked in successful accord with the regular medical services of the army. The Australian Army Medical Corps and the New Zealand Medical Corps have also been remarkable for their efficiency and unremitting devotion."

## Correspondence.

## THE TREATMENT OF PNEUMONIA.

42 West 37th St., New York,  
February 25, 1918.

Mr. Editor:—

To my mind, there are a few reasons why, hitherto, the treatment of pneumonia has been unsatisfactory. This is especially true in hospitals and also in instances where one plays the rôle of consultant in private practice.

In hospitals, as a rule, the patient comes in when the disease is already advanced and even good treatment has not a fair chance of success.

This is also true, in a measure, in civil practice, where the consultant physician is usually called when the disease is established.

In hospitals, patients are usually treated in the ward; in private practice among people at all well-to-do the patient has a room to himself and can be managed more effectively.

A patient stricken with pneumonia, or with a preceding bronchial or grippal attack which leads up to it, has the best chance to get well whenever he is isolated in his room from the beginning, whether it be at home or in a hospital, and a certain very simple treatment is mainly insisted upon, apart from what is in addition, eminently intelligent, and applies in all cases. The latter, to which I refer, are proper ventilation of the room, liquid assimilable nourishment, no

injudicious interference for purpose of finding out just how far the disease has progressed, and promotion of quiet and peace of mind. Inhalations of compound tincture of benzoin, with a proportion of beechwood creosote, should be started from the beginning of the disease and kept constantly going. A little of the best old brandy, or whiskey and black coffee from time to time and a hypodermic tablet of tincture of strophanthus, each containing one minim, placed under the tongue every two hours, is practically almost everything in the way of medication that is desirable and really useful.

If required, a little "cascara evacuant" for the bowels is the most suitable preparation to employ.

In looking back over a lifetime of caring for pneumonia patients, I have lost very few relatively, when I have been called in at the beginning of the attack and had practically the entire charge of the patient. I do not believe digitalis is of service, nor, indeed, strychnine. I do believe, in some instances, judicious and timely venesection will help save life. Hospital statistics have little weight with me on account of circumstances to which I have very briefly referred.

Experimental work is always problematical for quite a while and, by itself, should not be relied upon.

I cannot but hope every general practitioner will take heart from what I have written and firmly believe and simply do as I urge. Then, and then only, will the great and increasing death rate of pneumonia become notably diminished.

BEVERLEY ROBINSON, M.D.

## RECENT DEATHS.

JOHN MACLEOD MARTIN, M.D., a graduate of McGill University Faculty of Medicine in 1889, died at his home in Roxbury, February 19, 1918, aged 62 years. He was a Fellow of the Massachusetts Medical Society.

JOHN H. MULLEN, M.D., a graduate of Boston College, 1896, and Harvard Medical School, 1900, was recently found dead in his office. He had been suffering from an attack of pleurisy. He was 42 years of age. He is survived by his mother and six sisters.

JOHN B. CALLAHAN, M.D., who is noted for his scientific dental research work, died suddenly of apoplexy, February 20, in Cincinnati, Ohio, at the age of 65.

HOWARD BURHANS BESEMER, M.D., of Ithaca, N. Y., died at his home in that city on February 9. He was born in Dreyden, N. Y. on October 19, 1860, and graduated from the University of New York Medical College in 1891. He afterwards received an M.D. degree from the Cleveland Homeopathic Medical College. Dr. Besemer began practice in Ithaca and continued his work up to his death. He was a Fellow of the American College of Surgeons.

DR. LYMAN CURTIS BRYAN, a graduate of Boston Dental School, now Tufts Dental College, died recently at Lausanne, Switzerland. Dr. Bryan established himself in practice in that city after he had taken two years of postgraduate work in Germany and had remained there ever since. He was born in Kentucky in 1852.

## APPOINTMENT.

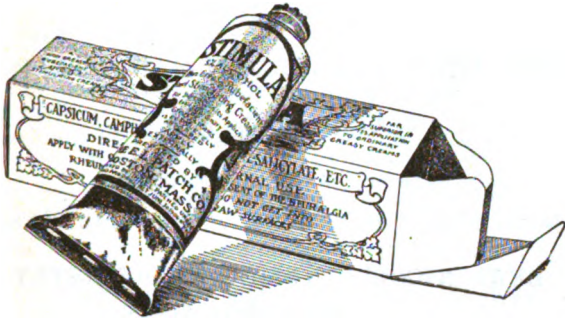
DR. EUGENE R. KELLEY, head of the division of communicable diseases of the State Department of Health, has been appointed successor to Dr. Allan J. McLaughlin, State Health Commissioner, who has been recalled to Washington.

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**Session 1918-1919.** Candidates are required to present evidence of the completion of two years of collegiate work toward a Bachelor's degree in a college recognized by the New York State Department of Education. This two years of college work must include at least one year of college work in Chemistry, Physics, Biology, English and either French or German.

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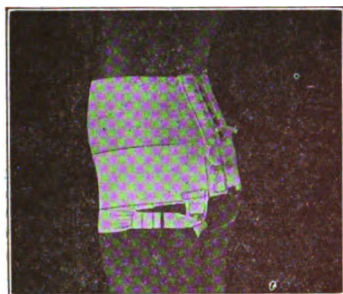
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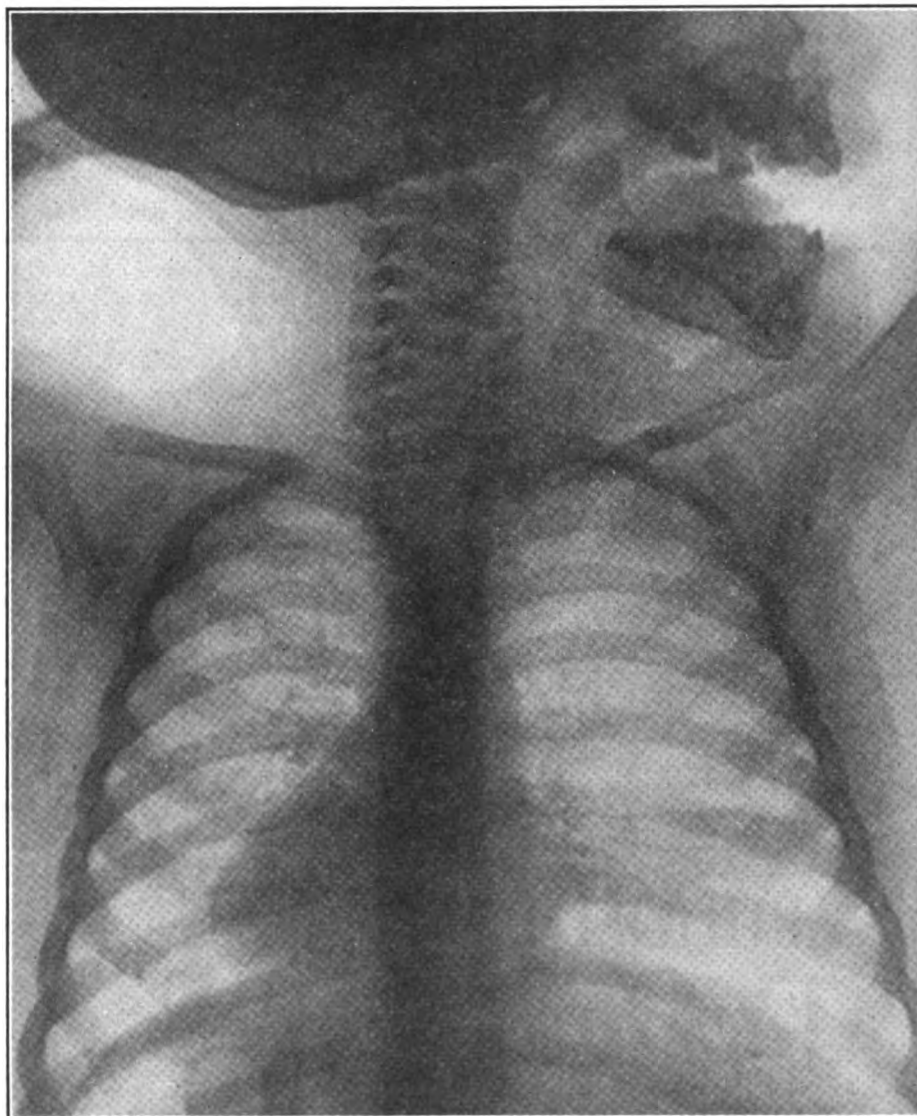
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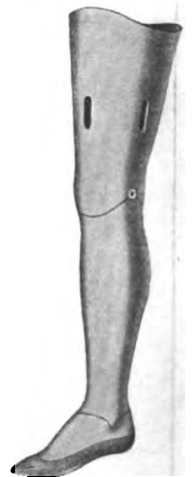
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## CONTENTS

### ADDRESSES

UNNECESSARY OPERATIONS.

*By George C. Wilkins, M.D., Manchester, N. H.*

ARTIFICIAL PNEUMOTHORAX AND PULMONARY TUBERCULOSIS.

*By Cleaveland Floyd, M.D., Boston*

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### MEDICINE.

#### RELATION OF VITAL CAPACITY OF LUNGS TO CLINICAL CONDITION OF PATIENTS WITH HEART DISEASE.

MCCLURE AND PEABODY (*Jour. Amer. Med. Assn.*, Dec. 8, 1917) call attention to the importance of a decrease in the vital capacity of the lungs as a factor in the production of dyspnea in heart disease. The degree to which the vital capacity is decreased below certain normal standards corresponds closely to the tendency to dyspnea. Since the tendency to dyspnea depends largely on the functional capacity of the heart, the determination of the vital capacity of the lungs may serve as an indirect measure of the cardiac condition. In a series of twenty-four cases it has been found that the clinical condition of cardiac patients varies closely with the changes in the vital capacity of the lungs. An improvement in the functional state of the heart is associated with a rise in the vital capacity. When the condition of the heart is apparently remaining stationary, changes in the vital capacity are not marked, and when there is evidence of increasing cardiac insufficiency, the vital capacity of the lungs falls. Charts showing the variations in the vital capacity of the lungs of patients with heart disease are frequently satisfactory objective records of the clinical course of the disease, and they may be of distinct aid in prognosis. [E. H. R.]

#### THE ADMINISTRATION OF EPINEPHRIN BY INTRASPINAL INJECTIONS.

AUER AND MELTZER (*Jour. Amer. Med. Assn.*, Jan. 12, 1918) refer to their previous work along this line on monkeys, and suggest that under the present war conditions epinephrin be administered intraspinally in cases of low blood pressure. The initial dose should not be less than 3 cc. for a 1:1000 solution. A rise of blood pressure should result from this procedure. The authors advise, in addition, that 30 or 40 minutes after intraspinal injection, a subcutaneous injection of the same solution be added. It is true that this procedure will not save life in every dangerous case, but physicians should at least employ a remedy which will improve the chances of recovery by 20 to 40%. They suggest that this procedure is of distinct value. [E. H. R.]

#### A STUDY OF 62 CASES OF DIABETES OF 15 OR MORE YEARS' DURATION.

HORNOR AND JOSLIN (*Amer. Jour. Med. Sci.*, January, 1918).

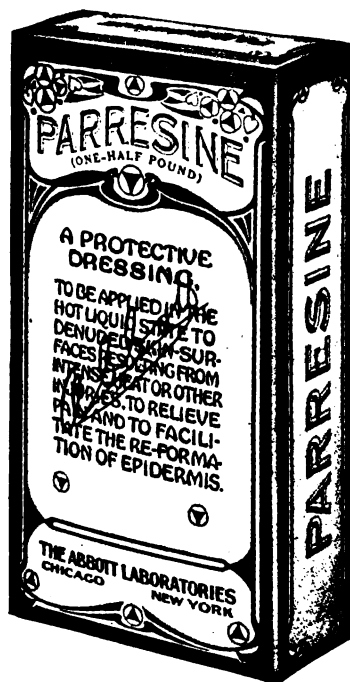
1. In a series of 1187 cases of diabetes, of whom 1156 are traced, 640 are living and 516 are dead; among these were 62 who lived fifteen or more years, or 5%, and of these 37 are living and 25 are dead.

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(Continued on page vi.)



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(Continued from page 10.)

5. Gallstones were recognized in 8 cases, being six times as frequent among these cases as in the entire series of 1187 cases.

6. The presence of acidosis was demonstrated 21 times and 11, or 44%, of the fatal cases succumbed to it. By the avoidance of acidosis, the lives of these patients might have been prolonged.

7. Arteriosclerosis occurred in 36 cases, and was a prominent factor in causing the death of 10 patients.

8. Diabetes is now a minor issue in 50% of the living patients, and at the time of death was a minor issue in 28% of those who had died. An extremely rigid diet is necessary for only 4 of the patients now living.

9. Of the fatal cases, 20% outlived the normal expectation of life for their age at the onset of their diabetes, and this is already true for 10% of the living cases. [E. H. R.]

### TUBERCULOSIS IN THE FRENCH ARMY DURING THE WAR.

DEBOLLE (*Medical Record*, Jan. 5, 1917) states, after a general review of conditions, that out of 86,000 soldiers discharged during past year of the war, less than 50%, and, on closer examination, less than 20%, were really tuberculous. The statements that there was much more tuberculosis in France than in any other country of the world is, therefore, not a correct one, and our ideas of tuberculosis in this war must be greatly modified. Heroic efforts are constantly being made to eliminate the disease from the army and for the protection of the non-infected. [E. H. R.]

### A CRITICAL ANALYSIS OF THE TREATMENT OF TUBERCULOSIS WITH COPPER AND POTASSIUM CYANIDE.

EVANS, (*Med. Rec.*, Oct. 6, 1917) states that copper and potassium cyanide, in amounts from 8 to 12 mg., in cases of uncomplicated pulmonary tuberculosis, is not followed by injurious results. Large doses, or even smaller ones in complicated cases or those presenting extensive active lesions with fever, may produce serious focal reactions, causing permanent harm. Severe hemorrhages are not likely to occur. The administration is not followed by severe general reactions. The preparation is not very irritating to the perivascular tissues if small amounts are accidentally injected into them. The value of the preparation in the treatment of pulmonary tuberculosis has not been conclusively demonstrated. Its further trial is justifiable. [E. H. R.]

### INFECTIOUS MENINGITIS.

GRAVES (*Jour. Lab. and Clin. Med.*, Oct., 1917) studying 27 cases in 586 autopsies, finds that correct ante-mortem diagnoses were established in 100% of cases in which proper lumbar puncture and spinal fluid examinations were made, and in only 70% when these examinations were not made. In drawing spinal fluid only the second portion collected in a separate, clean, dry, sterilized tube, free from contaminating blood, should be used. Any blood in the specimen renders the evidence unreliable. A grave responsibility rests on the doctor to do spinal puncture in all suspected cases and, therefore, give the patient the advantage of early diagnosis and the use of Flexner's anti-meningococcus serum. [E. H. R.]

### SHOULD CERTAIN TUBERCULOUS PATIENTS WORK?

FISHBERG (*Med. Rec.*, Nov. 24, 1917) points out the fact that the treatment of phthisis, previous to thirty years ago, was not by the rest cure, but by walking

(Continued on page 1011.)



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(Continued from page vi.)

exercises, climbing and out-of-door work. Only for the past thirty years has the strict rest cure been employed. There is gradually developing a reaction against the indiscriminate use of this form of treatment. It is often much overdone. Cases for exercise or work, and cases for absolute rest should be more carefully selected. Prolonged rest may be very deleterious in its effects, especially on the muscular and nervous systems. There is greater necessity for individualization in phthisiotherapy. The author then goes to some length with the discussion of which tuberculous patients should work and which should rest, and names the various occupations a patient may safely indulge in. The tuberculous patient, he believes, should not be an economic loss to either the state or himself. [E. H. R.]

### THE SENSITIZATION OF HAY FEVER AND ASTHMATIC PATIENTS TO THE PROTEINS FOUND IN THE DIFFERENT PARTS OF PLANTS AND TO THE INDIVIDUAL PROTEINS OF THE CEREALS,—AND A COMPARISON BETWEEN THE CUTANEOUS AND THE INTRADERMAL TESTS IN THE SENSITIZATION OF ASTHMATIC HAY FEVER PATIENTS.

WALKER and ADKINSON (*Jour. Med. Research*, Nov., 1917) make the following conclusions from their extended work along these lines. They find that patients who are extremely sensitive to the pollen of ragweed are only slightly sensitive at the most, and are usually not at all sensitive to the proteins found in other parts of the ragweed plant. Therefore, parts of this plant, other than the pollen, do not cause hay fever and asthma, and the pollen is the only part of the plant that is useful in desensitization. Patients vary in their sensitization to the individual proteins of each of the cereals, and to similar proteins in different cereals. The skin test should, therefore, be a means of separating very closely-related proteins, even when other means, such as chemical and physical properties, fail to do so. The skin test is specific: it is a safe index to proper treatment. The intradermal test is much less specific; it does not always separate closely-related proteins; it is much too sensitive, and therefore is not an index to proper treatment; it is more difficult to do and may cause the patient considerable discomfort and should be discarded in favor of the skin test. [E. H. R.]

### ELECTROCARDIOGRAPHIC OBSERVATIONS IN TOXIC GOITRE

KRUMBHAR (*Amer. Jour. Med. Sci.*, Feb., 1918) finds from an extensive study of 51 cases seeking surgical relief, that in early cases of toxic goitre the characteristic tachycardia is not accompanied by any signs of myocardial change that are demonstrable with the string galvanometer.

2. With persisting overaction of the heart, hypertrophy of either ventricle may become manifest.

3. Progressive hypertrophy and overaction results in myocardial degeneration that may be manifested by any type of cardiac irregularity; sinus arrhythmia, premature contractions, auricular flutter, auricular fibrillation, heart-block, etc.

4. If the existing intoxication is the chief factor in the production of the arrhythmia this may disappear with removal of the intoxication.

5. Successful treatment, whether medical or surgical, improves the cardiac condition by this means. This is shown not only by the occasional disappearance of an arrhythmia but also by diminution in the size of the T wave and in the pulse-pressure as well as by the general clinical condition. [E. H. R.]

(Continued on page x.)

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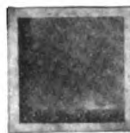
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# The Boston Medical and Surgical Journal

## TABLE OF CONTENTS

March 14, 1918

ADDRESSES	EDITORIALS
UNNECESSARY OPERATIONS. <i>By George C. Wilkins, M.D., F.A.C.S., Manchester, N. H.</i> . . . . . 847	TRENCH FOOT . . . . . 367
ARTIFICIAL PNEUMOTHORAX AND PULMONARY TUBERCULOSIS. <i>By Cleveland Floyd, M.D., Boston</i> . . . . . 849	VOCATIONAL REHABILITATION OF DISABLED SOLDIERS . . . . . 368
	REDUCTION IN PAY OF OFFICERS IN THE FIELD . . . . . 369
	MEDICAL NOTES . . . . . 370
ORIGINAL ARTICLES	THE MASSACHUSETTS MEDICAL SOCIETY
TRANSFUSION. EXPERIENCES IN OVER TWO HUNDRED CASES. <i>By A. R. Kimpton, M.D., F.A.C.S., Boston</i> . . . . . 351	MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION. LIST OF MASSACHUSETTS PHYSICIANS IN THE SERVICE OF THE ARMY, NAVY AND RED CROSS. . . . . 372
THE SURGICAL TREATMENT OF EMPYEMA. <i>By Wyman Whittemore, M.D., F.A.C.S., Boston</i> . . . . . 360	
CLIMATE IN TUBERCULOSIS. <i>By H. F. Gammons, M.D., Carlsbad, Texas</i> . . . . . 364	OBITUARY
	JAMES OLIVER, M.D. . . . . 378
BOOK REVIEWS	MISCELLANY
Manual of Psychiatry. <i>By I. R. deFursac and A. J. Rosanoff</i> . . . . . 366	MEMORIAL TO DR. CUTTS . . . . . 379
An Inquiry into the Principles of Treatment of Broken Limbs. <i>By William F. Fluhrer, M.D.</i> . . . . . 366	COMPETITIVE EXAMINATION FOR CANDIDATES FOR POSITIONS IN THE MASSACHUSETTS STATE DEPARTMENT OF HEALTH, AND REGULATIONS GOVERNING APPOINTMENT. . . . . 379
The Control of Hunger in Health and Disease. <i>By Anton Julius Carlson</i> . . . . . 366	RECENT DEATHS, ETC. . . . . 380
Standard Surgical Dressings. <i>By Nellie A. MacKenzie, R.N.</i> . . . . 366	

### Addresses.

#### UNNECESSARY OPERATIONS.\*

BY GEORGE C. WILKINS, M.D., F.A.C.S., MANCHESTER, N. H.

AFTER graduating from the medical school and passing through his hospital service or services, the physician who has not elected to devote his time to laboratory work or administrative duties enters upon the active practice of his chosen profession.

He at once assumes certain obligations which, although implied, are none the less imperative. In his professional life, his contact with his patients is more intimate, more responsible and demands more honesty of purpose than any other professional or commercial relationship between individuals. It is to be regretted that the principles, if not the words, of the Hippocratic oath, have not been dwelt upon in the medical school teachings, with more serious appreciation of their application to present-day conditions.

In no phase of contact between individuals should the principles of the Golden Rule be more rigidly adhered to than in the dealings of a physician with his patient. The average patient consults a physician of ability, or a man to be trusted. Whether the physician is one of the leaders of his profession or a more humble worker in the ranks, there is only one attitude for him to assume in his treatment of the pa-

tient. He must not violate the confidence; he must give the best advice that within him lies, and in doing so he will be giving what all men desire with regard to themselves—honest dealing.

We are all human, and to be human means that we all make mistakes. A man may be pardoned for making a mistake, particularly if it is a mistake in judgment, but there is no pardon for the man who deliberately violates the confidence reposed in him, and wilfully subjects his patient to unnecessary and uncalled-for procedures. Sins of omission we may censure; but what can we say of the man who maliciously commits sins of commission in the medical or surgical treatment of his patient.

Please let it be understood that this paper is not intended as an arraignment of physicians and surgeons as a body; far from it, for I believe the large majority of men in our profession hold to the beliefs which I have mentioned, and endeavor, according to their lights, to live up to them, conscientiously and faithfully.

Unfortunately, there are men scattered through the profession who are constantly guided by two factors other than the consideration of the real good of their patients. These two factors are, an abnormal development of the commercial instinct, and an ambition to forge ahead, regardless of the means utilized.

The desire for money, and we may sometimes say, the need for money, is a well-known incentive to wrong-doing, and it is impossible for some men in our profession to resist an opportunity to take what they call "ready money" for rendering some service to a patient who has

\* President's address at the Annual Meeting of the Hillsboro (N. H.) Medical Society, at Manchester, N. H., April 18, 1917.

falsely been led to believe that such service is necessary.

Ambition is laudable, but ambition should not travel alone. Ambition, to be honestly successful, should be accompanied by a conscience. Ambition to accomplish a large amount of work, ambition to keep a hospital well filled, ambition to acquire the glory of many successes, have all led men in our profession away from the ideals to which they should cling, and when they have pursued this path for a certain length of time, God only can help them and their patients.

The practice of surgery opens up to these men larger fields of opportunity than can be obtained in other branches of medical practice, because the patient usually has no way of verifying the results of his operation. The patient is advised that he needs an operation; he implicitly trusts his surgeon, as all patients should, but at times this trustfulness, as observed by an uninterested onlooker, is quite pitiful to contemplate.

As an example, I will cite an incident occurring several years ago. A physician was called to a young married woman who gave a history of rather excessive flowing two weeks after a normal period. The physician, after examination, advised an intra-abdominal pelvic operation, and the patient was moved to a hospital. The husband then decided to have a consultation, and an older man was summoned. He found the pelvic organs in an absolutely normal condition and advised waiting. Two years later the patient was still in perfect health.

Another woman was advised that she needed an operation for a large cystic tumor of the ovary. She later consulted the surgeon on duty at a hospital in the same town. He found absolutely nothing abnormal in the pelvis.

Too often operations have been advised from the deductions of a snap diagnosis. This is always inexcusable, for if ever a patient deserves an adequate consideration of his case it is when his subsequent treatment contemplates the dangers of a surgical procedure, and we cannot be too often reminded that even minor operations may not be devoid of danger.

The mistakes resulting from a snap diagnosis can be illustrated by two cases, both young women, who consulted the same physician during the vacation absence of their own physicians. The first complained of backache of recent origin. She was examined vaginally at once and informed that she must have an operation on her uterus and tubes. After the return of her physician he examined her and found nothing abnormal with the pelvic organs, but did find her trouble to be due to muscle strain. Strapping her back with adhesive plaster cured the backache.

The other patient complained of a diarrhea of two or three weeks' duration. Without a physical examination, this physician advised an operation on the intestines, the exact nature of

which the patient did not understand. When her physician returned, he cured her very shortly with bismuth and liberal doses of bromide.

Something might be said in regard to the inadvisability of too radical operations, when more conservative methods would produce equally good or better results. I have known of enthusiastic young operators removing the uterus in several young women for simple retroversion. This can be considered only an unnecessary procedure and absolutely unscientific.

Then, again, we have the hopeless cases—inoperable cancer and recurrences of cancers that are anatomically inoperable. Is it right or fair to open the abdomen of a woman who had a recurrence of cancer several years after a complete removal of the pelvic organs for cancer of the uterus? It is not justified, unless there is an intestinal obstruction to relieve or some such secondary complication.

One of my own cases had a recurrence about five years after primary operation. Understanding that she was to be operated by another physician, I asked him what he expected to accomplish. He replied that he did not expect to accomplish anything, but that the patient insisted upon an operation, and he might as well have her money as anyone. Two other similar cases have been related to me by other physicians.

Let us now consider that small concealed portion of our anatomy hiding away in various positions alongside the cecum—the appendix—which causes trouble enough in itself without being blamed for every transient non-febrile belly-ache that our many feet of intestines may be called upon to endure. Some surgeons seem to look upon this organ as a legitimate, or rather, illegitimate, means of enabling them to contend against the high cost of living.

Probably most of you, at some time or other, have been called upon to render judgment as to whether a certain patient has appendicitis or not, and if so, to advise whether or not he should be operated upon. There is so much latitude of opinion in these cases that we should not judge another's diagnosis and advice harshly, and never hastily, but when in a given community a number of able practitioners have case after case coming under their observation, where an incorrect diagnosis of appendicitis has been made by the same one, two or three surgeons, and these cases have been followed up for a considerable length of time without developing real symptoms of appendicitis, and are, perhaps, relieved by simple medication, then I do not think I am making too strong a statement when I say there is just cause for doubting the honesty of these men.

While, as I have said, the average patient accepts his surgeon's advice as honest, the cumulative evidence of a multiplicity of mistakes in the diagnosis of appendicitis, intentional or otherwise, has developed a fear in the minds of

the laity that they may be hurried unnecessarily to the operating table.

It is perfectly obvious why more unnecessary operations are performed on the appendix than upon any other organ. In the first place, it is concealed before operation, and it may be concealed after operation. The patient is usually satisfied with the explanation that the appendix was considerably inflamed, that it had been taken just in time, or that it was found to be much worse than expected. Secondly, appendectomy in an uncomplicated case is an operation easily performed by anyone with but slight knowledge of surgery.

It is a recognized fact that the public will stand being fooled for a long time, but as a straw showing the direction of the wind, I will call your attention to the legislature of a Western state which has been considering seriously a bill (whether the bill has since passed or not, I do not know), providing that every appendix removed in the state shall be examined at the state laboratory, and if found normal, the patient is to be absolved from remunerating the surgeon. The originators of this bill may have had some experience, for in the penalty prescribed is found the true indication of its effectiveness.

This attitude which has developed in the public mind is entirely due to the activities of surgeons who have felt of the abdomen with the hand, but whose eyes have been focused on the fee.

While I think it is entirely unnecessary to cite to you cases illustrating the foregoing remarks, I will relate a story told me by a physician in the central part of this State, as it touches upon another phase of unnecessary operations, namely, surgical procedures requiring ether upon patients affected with active tubercular processes in the lungs. This should be done only after very careful consideration of the case, and with assurance that the patient will be benefited by such procedures.

A patient of this physician had an active tubercular process in both lungs, and with it a certain amount of stomach disturbance which the physician attributed to the tubercular condition. One day the patient took matters in his own hands and consulted a surgeon, who at once informed him that his appendix was the cause of his stomach trouble and should be removed. Not entirely satisfied with this, the patient journeyed on to Boston and entered a large hospital for diagnosis and treatment. At this institution he was told there were no indications of appendicitis, and was sent back to the country.

Not infrequently we are asked, "Doctor, would you advise this operation if it were a member of your own family?" and while I do not feel that it would be at all practical to apply this test to all operations, I believe a certain amount of mental consideration along this line in the mind of the surgeon in all doubtful cases, if honestly weighed in the balance of judgment,

would tend to eliminate many operations, where the real indication has been the fee or the mere desire to operate, and not the ultimate good of the patient.

## ARTIFICIAL PNEUMOTHORAX AND PULMONARY TUBERCULOSIS.\*

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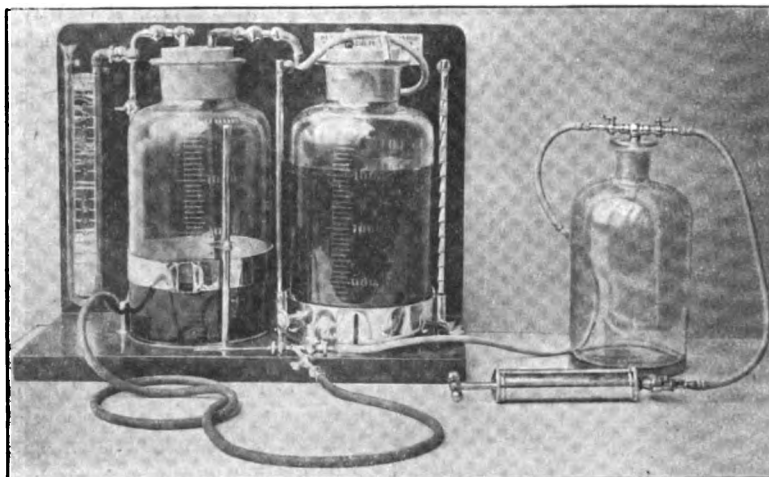
SINCE Koch produced tuberculin and with it raised the hopes of the profession that a cure for tuberculosis had been found, no therapeutic measure has aroused so much interest as artificial pneumothorax.

As was true of tuberculin, so is it equally true of pulmonary compression by nitrogen, that there is a great diversity of opinion in regard to its efficacy; and even after ten years of its gradually increasing use, its exact limitations and place in the treatment of tuberculosis are not yet entirely determined. One thing, however, has been established and that is, that no patient should be denied its possible effects where other measures have failed. The procedure of its production has undergone little modification since the early work of Forlanini, and only minor modifications in technic, tending to simplify the procedure, have been adopted by most operators. The initial incision in the chest wall, as advocated by Spengler, has been entirely replaced by the much simpler procedure of thoracentesis. Injecting nitrogen into the chest, however, is quite different from syphoning fluid out, and unless the procedure is fully safeguarded by manometric readings, it becomes one of some danger. Where, however, it has been determined that the needlepoint lies in the pleural cavity, no difficulty is generally experienced in producing a limited pneumothorax. Subsequent injection of the gas in close proximity to the first region compressed, if the lung is collapsible, usually causes no difficulty, and with amounts of nitrogen varying from the initial 300 cc., increased up to 700 or 1000 cc., depending upon the amount of pressure considered desirable in the chest, will generally carry on the collapse of the lung to partial or complete obliteration of its air spaces.

The successful treatment of phthisis demands that there should be a steady, continued positive pressure in the chest as indicated by the manometer, and this should be the object of the operator after the inception of the treatment.

In most instances, the lower part of the lung lends itself more readily to compression, both on account of the anatomical arrangement of the chest, and because of the freer movement and the less frequent involvement of the lower lobes of the lung. Where the process is in the upper half of the lung, and nitrogen is inoculated into

\* Presented before the Framingham Medical Club and Community Health Station, Oct. 18, 1917.



PNEUMOTHORAX APPARATUS CONNECTED FOR ASPIRATION AND INFLATION.

the chest over the lower lobe, it is often surprising to see how rapidly transmitted pressure will effect the activity of a process at some distance from the direct point of application.

Among the workers in this field there seems to be an almost unanimous opinion that this therapeutic measure in all cases where it can be made applicable to any extent, is a beneficial measure, and the diminution of active signs and symptoms is often most gratifying, even where at times only temporary.

This has led many men to use the artificial pneumothorax as a palliative measure for the comfort of patients, even where no permanent effects are to be expected, and on this account in the tabulation of results obtained, the headings of permanent and palliative very commonly appear. It certainly can be said without fear of contradiction, that if this measure were of no other benefit than a palliative one, for the distressing symptoms of a hopeless case, its use is justified.

The difficulties and complications of the method are fairly well known. A few cases of pleural shock have been reported in the literature, but these have been far less numerous than would be expected where the method has been used by so many physicians. I have personally seen one such case. It would seem that in most cases this catastrophe might be avoided by the thorough cocaineizing of the pleura and use of morphine, before nitrogen is put into the chest. The most common complication is the occurrence of a pleural exudate, either as an effusion or as pus. Between 40 and 50% of the cases sooner or later show effusions, which occasionally may become purulent. The effusion itself can readily be removed, and replaced with nitrogen, but an empyema is a much more serious complication. This latter condition is generally due to the entering of the effusion by micro-organisms from an extensively involved lung, or by the puncturing of the lung and sub-

sequent infection of the effusion by the operator's needle.

Among the rarer complications are gas-embolism and accidental pneumothorax. The former has been observed by few clinicians, and while the latter is not rare, few cases have been reported. Beggs cites two such cases in his practice. Two real difficulties stand out in the use of this method, first, the occurrence of adhesions with more or less obliteration of the pleural cavity, and second, the difficulty of determining how long to continue treatment after all symptoms and active signs have subsided.

The increasing importance of the x-ray in this work is rapidly becoming recognized. Its chief value lies in determining the extent of the pneumothorax produced, the position of the collapsed lung, and whether or not a small effusion is present. Its failure to determine the presence of fine adhesions or areas of obliteration of the pleural cavity is a serious one, as this is the greatest handicap with which the operator has to contend. Stereoscopic plates, however, give promise of better results along this line.

In regard to the selection of cases for treatment, the original idea of Spengler still holds that the unilateral, non-adherent, tubercular lung is the ideal for this treatment. The majority of men, however, have used this method chiefly in the advanced case, and often as a last resort. Such cases occasionally show marked improvement, and as a palliative measure the treatment is justified. In most cases, however, cure is not to be expected, and it is here that all the difficulties and complications of the method are likely to arise. There is a growing feeling among phthisiologists that the method is applicable earlier in the disease than has hitherto been thought desirable, and if cure is to be hoped for through the use of artificial pneumothorax, it should not be limited to the advanced case.

In any case, no matter how early in the disease, where two or three months of good sanato-

rium treatment has failed to retard the advance of a tubercular process, this therapeutic measure should be invoked.

One of the greatest sources of failure to obtain better results lies in the fact that too often the collapsed lung is allowed to re-expand in too short a period of time.

In many cases where an arrest of the disease has been secured by this method, disaster has finally resulted, because of the failure to continue the compression of the lung for a sufficient period of time, even after all symptoms have subsided. In my opinion, re-expansion of a compressed lung should be allowed to take place very slowly, and only after all activity of the tubercular process has ceased, for a period of at least six or eight months.

As has been well said, statistics are of little value, because of the great individual variation shown by pulmonary tuberculosis. One thing, however, may be gathered from such figures as are at hand, namely, that one-third to one-half of the cases sufficiently treated have been classed in the group of "markedly improved or apparently arrested." Case for case, where the untreated, well marked consumptive is contrasted with similar cases that have undergone artificial pneumothorax, the results overwhelmingly prove this measure to be one of great value. The frequently quoted statistics published by Sachs, of the results obtained by American observers, show that about 50% were either improved or the disease arrested.

The results of Wolman and Hirshman show that the late results in a series of 141 cases gave about one-fourth as permanently benefited. The figures of Shortle show about 50% of his cases to have done well. Such results are general among many American observers and merely go to prove that in competent hands this therapeutic measure has an established place in the treatment of pulmonary tuberculosis.

If it is used only in the ideal case the results would be brilliant, but even where it has been applied as is generally the case among the most unfavorable and even hopeless cases of advanced phthisis, it has proved of more value than any other measure that we have at hand.

With increased experience and the restriction of this measure to sanitarium patients, as is gradually becoming the practice in this country, the results obtained will steadily improve, and no man who has the best interest of his patients at heart can afford to neglect artificial pneumothorax where other measures have failed.

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## Original Articles.

## TRANSFUSION. EXPERIENCES IN OVER TWO HUNDRED CASES.\*

BY A. R. KIMPTON,† M.D., F.A.C.S., BOSTON.

I HAVE several times heard most excellent men say that they had never seen a patient who really needed transfusion. I have seen over 200 cases that did need it, for I have done that number of transfusions. Likewise, I have seen a patient die who I thought did not need transfusion, and die for want of it, although the death was sudden. All of these cases have arisen in the course of a general surgical practice, and many others have been seen as to the advisability of doing transfusion, that were deemed inadvisable.

No longer is transfusion a procedure of last resort, nor is it one of uncertain technical success. It is distinctly a definite surgical procedure, certain as to its performance, and definite as to its indications.

No matter what one's pet method of transfusion may be, he should remember that it is to Crile that the credit belongs for putting the technic on a surgical basis, and it is to J. C. Hubbard that I owe my interest in the subject, as assistant to him in the use of Crile's technic.

So transfusion now is a very definite surgical procedure, and has a very definite place in the treatment of certain medical and surgical conditions, as well as in the treatment of certain emergencies. Technical difficulties may be said to have been entirely overcome. Following the drive on new methods came the knowledge that there were other difficulties, such as agglutination, hemolysis, so-called anaphylaxis, and acute dilation of the heart. These, too, are now largely overcome by careful preliminary tests and care during the transfer of blood to the patient to avoid acute dilation of the heart. Nevertheless, the only death I have had directly due to incompatible bloods was from anaphylaxis, after most careful iso-agglutination tests had been done by a trained laboratory man. I will later speak further of blood tests.

Recently I have had a second death from the same cause, after careful tests had been made.

If one were to ask, "When is transfusion of value?" the answer might, roughly, be this:

In acute secondary anemia (acute hemorrhage), yes.

In chronic secondary anemia, yes.

\* Read before the Massachusetts Homeopathic Medical Society, Lawrence Medical Society, and Essex South Medical Society.

## † PREVIOUS PUBLICATIONS ON TRANSFUSIONS:

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In acute primary anemia, such as acute leukemia, no.

In chronic primary anemia, such as pernicious, yes.

It is in the massive, acute hemorrhage that transfusion is of the greatest value, and it is in these cases that one gets the most pleasing results,—often almost miraculous. It is at least most dramatic to see a patient the picture of death,—cold, pulseless and unconscious,—return to consciousness with a good pulse and color, by means of a prompt transfusion. Not all cases get as far as that, but I have seen just that a good many times.

For massive, acute hemorrhage I have done some fifty transfusions, not including hemorrhage of the new-born, or hemophilia. Of these there have been 17 deaths, and several of the deaths were because of complications existing besides hemorrhage, such as malignancy, sepsis, nephritis, etc. When one considers all these cases were seen in consultation because of great hemorrhage, the results are especially gratifying. The hemorrhages were from very varied sources, such as post-operative hemorrhages, rupture of ectopic pregnancies and spleens, uterine fibroids, post-partum hemorrhage, hemorrhages from that most dangerous operation—tonsillectomy—and hemorrhages from stomach, etc. In fact, hemorrhages from almost every organ in the body have been seen and the patients transfused. Great care must be taken in these massive hemorrhages not to give too much blood, unless assured that the bleeding vessel is secured when the vessels may be filled; otherwise Nature's means—lowering of blood-pressure—of stopping the bleeding will be defeated.

The average amount of blood transfused in the acute hemorrhages is 800 to 1000 cc., although more is at times given, but rarely is more than 1000 cc. necessary. If the bleeding is not secured, as a rule not over 500 cc. is given.

I have transfused and immediately operated upon fourteen cases in this group of acute hemorrhages. All were critically ill and, with two exceptions, all recovered. Several others were operated upon by other surgeons either while I was doing the transfusion, or immediately afterwards. These cases were mostly hemorrhage from the stomach, ruptured spleens, ruptured ectopic pregnancies, ruptured arterio-venous aneurysm, uterine polyp, or fibroid, and gunshot wound of the abdomen. The results obtained in each case would be well worth while enumerating, but too much time would be taken. Suffice it to say that there is nothing more pleasing to the surgeon than the successful outcome in such critical cases. The bleeding from all except the stomach hemorrhages is of definite origin, but it should be emphasized that not all massive hemorrhages from the stomach are by any means intra-gastric or intra-duodenal in their origin. Without question, many of the cases labeled hemorrhage from ulcer of the stomach or duodenum are splenic in origin, and

splenectomy saves such cases—to say nothing of those from rupture of an esophageal varix.

Seldom will a patient die following a single gastric hemorrhage, but it is such repeated hemorrhages that are to be feared. These cases transfused and immediately operated upon have a decidedly better chance of life than when treated medically. The medical men might ask: "What assurance have you that you will find the bleeding point?" I can only answer that I have a much greater chance of finding the bleeding point than has the medical man. Furthermore, I believe that the hemorrhage in many of the cases operated upon and no evidence of ulcer found, but a somewhat enlarged spleen found, to be of splenic origin. At the same time there are small gastric ulcers involving only the mucosa and giving no serous surface evidence of ulcer that do cause massive hemorrhage. Usually the hemorrhage, if of intra-gastric origin, is accompanied by a gastric history. Illustration: A woman sixty-five years old, with a gastric and duodenal history covering fifteen years, with several hemorrhages, was seen in consultation because of massive gastric hemorrhage. Patient pulseless, with almost no capillary reaction, was transfused with 500 cc. of blood. Warning of repeated hemorrhage was given, and further surgery advised but refused. The patient's response to transfusion was most satisfactory, but five days later the hemorrhage was repeated. This time the patient was apparently moribund when seen. A second transfusion was rapidly done, giving 800 cc. of blood, and this immediately followed by a laparotomy consisting of a posterior gastroenterostomy, and the turning in of an ulcer just beyond the pylorus. This patient is entirely well, sixteen months later.

I could mention a good many similar cases, but this will suffice to illustrate the point. A good many times I have transfused and immediately operated upon patients suffering from ruptured extrauterine pregnancy with recovery in each case. These have all been cases in a most critical condition. To be sure, the hemorrhage of most extrauterines has stopped when operated upon, but they can be brought to a normal condition much more quickly and operated upon much more safely with transfusion than without.

Under certain conditions the blood free in the abdominal cavity can be filtered and used to transfuse the patient. This is likewise true of blood in other cavities of the body. I have had no occasion to take advantage of this procedure, as donors have always been available. Nevertheless, it should always be remembered as a useful procedure.

One might ask: "How do you decide whether or not a patient needs transfusion?" I depend largely upon my experience with such cases.—their appearance, pulse, and capillary reaction, together with their hemoglobin and diastolic blood-pressure. Any patient with a



diastolic blood-pressure getting down to fifty or less because of hemorrhage is in a dangerous condition. The amount of blood lost and the time consumed in losing it is of marked importance, for a sudden hemorrhage is much more serious than a slow hemorrhage of greater amount. It is not always easy to decide, but, provided sufficient blood tests have been made, it is safer to transfuse border-line cases. They will recover much more quickly, will be more resistant to infection, and less liable to further hemorrhage. This was brought home to me forcibly by having just such a patient die without transfusion, and I believe this was an error of judgment on my part. This patient had had severe hemorrhage from a complete placenta previa, had been delivered, and was seen in consultation as to the advisability of transfusion. She was improving rapidly, and although much blood had been lost, I advised against transfusion, when she suddenly became worse and promptly died. She might have died anyway, but I believe a transfusion, judicious in amount, might have saved her life. Only the preceding week I had seen an almost identical case following difficult delivery, and advised against transfusion, with prompt recovery. I have seen a considerable number of such cases and advised against transfusion, with recovery of all patients except the one mentioned.

Nevertheless, large hemorrhages due to placenta previa are always, in my opinion, safer with transfusion than without, especially when a considerable amount of blood has been lost suddenly.

A patient suffering from acute hemorrhage,—cold, rapid, thready pulse, or pulseless, white, sometimes cyanotic,—successfully transfused, improves markedly in color, with return of pulse or decrease in its rate, with increased red cells and hemoglobin, with sense of warmth and often hunger,—in other words, either a return to the normal, or an approach to it. I have seen several patients cyanotic, noticeably in the forearm, before they became pallid, and have remarked that the patient is bleeding rapidly. This probably is due to increased heart beat and delay of venous return, and is more often seen in the larger rapid hemorrhages. Much more I could say concerning transfusion in the treatment of acute hemorrhage, as it is its greatest field of usefulness; but enough of acute hemorrhage.

#### SECONDARY ANEMIA.

Here again one finds a most suitable field for transfusion, and in this group there have been 15 transfusions in 12 patients, with three deaths. Of the deaths, one was secondary anemia arising from actinomycosis. Another death was due to a later operation for gallstones. The patient was apparently dying before transfusion, was deeply jaundiced, and much improved by the transfusion so that operation could be at-

tempted. A few days later she was operated upon and stones were found not only in the gall-bladder and ducts, but many in the liver itself. It seems hardly fair to include this as a death on my list of transfusions; nevertheless, I include it. The third death was the result of intestinal obstruction following an operation for a pelvic abscess of long duration. So one sees that transfusion itself really has no mortality in secondary anemia, and does put patients in a condition to receive surgical benefit, when without transfusion it would have been, to say the least, very dangerous, if not fatal, to have attempted surgical interference.

Not uncommonly one sees a patient who has been bled out by constant or frequent small hemorrhages from one source or another, such as from ulcers, uterine polyps, and so forth. These cases are readily put into shape for operation by transfusion, and transfusion is usually best performed before the operation, although the milder cases may be operated upon first and a transfusion done immediately afterwards, if necessary.

The cases of secondary anemia coming about from Banti's symptom-complex are often most successfully transfused, either before or after splenectomy. When removing large spleens, one should take care to tie the splenic artery first rather than tying the pedicle as a whole; otherwise a large spleen may be removed full of blood, and an acute hemorrhage, to all intents, caused. In reality there is no mortality in secondary anemia because of transfusion, and, as stated above, there should be no mortality from transfusion in itself at any time; this with a very rare exception.

#### HEMORRHAGE OF THE NEW-BORN.

These cases are, of course, acute hemorrhage, but have been grouped as entirely by themselves. There is no condition where transfusion gives better results. It is specific in its action and nearly every case will recover provided one has not delayed too long and that the hemorrhage is not due to congenital defect of the bile passages. Even the majority of the cases seen very late will recover with transfusion.

As to what cases of hemorrhage in the new-born should be transfused, it has been my experience that any baby having had a hemorrhage, large enough to show it clinically, is safer transfused than not, for such an infant is very liable to have further hemorrhage which may suddenly prove fatal. Furthermore, any infant having had two or more small hemorrhages, whether or not they show it clinically, are safer transfused, for one never knows when such an infant may have a fatal hemorrhage. It takes but a small amount of blood to transfuse a new-born baby,—from 60 to 120 cc.

The method of transfusion in new-born babies is now not difficult because of the use of the infant's longitudinal sinus, as brought out by

Helmholz. This technic I will describe later. I have several times met with hemorrhage of the new-born in which the longitudinal sinus could not be used because of great hemorrhage into the scalp, but even so, *it may be used by feeling one's way into the sinus with a longer needle.* Under these circumstances the external or internal jugular vein is by far the most suitable. I have records of 28 such cases consisting of 30 transfusions. In 12 the longitudinal sinus was used. Six of these babies died: the others, many of which were seemingly moribund, are still alive. Those which died were cases seen very late, with the exception of two, one of which showed congenital malformation of the bile ducts at autopsy. This baby had most profuse hemorrhage, which immediately stopped following transfusion. Ten days later the child began to bleed, and transfusion again stopped the hemorrhage; another ten days and the same thing happened, and this time death followed. Another death came suddenly twenty-four hours after a most dramatic immediate recovery from hemorrhage. No autopsy was done.

I have never seen a reaction of any kind following transfusion in new-born babies, probably due to the fact that the blood of infants does not, as a rule, become grouped until the end of the second year. With only two exceptions, I have used the father as donor. In these two exceptions the mother was used. My clinical experience makes me feel that it is safe to use the mother, and probably the father, as donor. Other men's experience may have been different. The offspring of sensitive mothers are also sensitive for a short time; therefore, one should not get a reaction from injecting a baby with the blood of its mother.

To be sure, there are other methods of treatment, such as serum therapy, that are efficient in many cases. At the same time, to my mind, there is nothing so satisfactory as transfusion for severe cases. Nearly all of the serious cases had had serum in some form.

#### HEMOPHILIA.

Transfusion cures the attack, but does not cure the disease, and in severe cases will often prove life-saving. No one can say as to the length of time the patient will be free from hemorrhage.

The donor of the patient should not be a relative. Nevertheless, the mother's blood is not necessarily counter-indicated, for although hemophilia is transmitted by the mother to the son, this hereditary character may be transmitted in the germ cell rather than by the maternal blood; hence, the transfusion of a hemophiliac with mother's blood is not counter-indicated, provided agglutination tests are carried out. I have had one satisfactory experience in using the mother as a donor.

#### SHOCK.

On the grounds that shock is really hemorrhage into the abdominal veins, transfusion, theoretically, should be an ideal treatment, and many men state that it is such. Yet, in my own hands, it has been disappointing, and I think it is only fair to state that there is no reason why the blood transfused should not further distend the already distended abdominal vessels, as there is no reason to expect this blood to have any effect upon the cause of the condition we call shock. If the cause of shock is fat embolus, as claimed by some, then certainly transfusion can be of little value. However, cases of so-called uncomplicated shock, with a diastolic blood-pressure down to fifty or less, may be greatly benefited by prompt transfusion. When taking the diastolic pressure in these cases, one should look for aortic regurgitation, as such cases may have little or no diastolic pressure to start with. Of course one sees cases with predominating shock brought about by hemorrhage not necessarily large, but usually sudden. Here the situation is entirely different and transfusion is of great value, for it replaces the blood lost, thereby removing the initial cause of the shock. Much more might be said on this subject of shock. One case will illustrate:

A brakeman, run over by a freight train, with loss of both legs above the knees. The amount of blood not large but suddenly lost; patient seemed to be suffering from extreme shock brought about by the sudden loss of a comparatively small amount of blood. Patient was *in extremis*, but responded at once to a prompt transfusion, and made an uneventful recovery.

#### SEPSIS.

Concerning transfusion in the treatment of acute sepsis, and in this I include the acute purpura, I will frankly state that I see no place for it, as the blood transfused promptly becomes septic itself, and all of my cases done for acute sepsis have died. But those cases of prolonged sepsis, with a resulting secondary anemia, may be much benefited by transfusion, thus raising their resistance. Whole blood in itself is somewhat bactericidal as well as hemostatic. In such cases there is a large field for the immunization of the donor to the infecting organism and repeated small transfusions from this donor.

#### GAS-POISONING.

In this group I have had but one patient upon whom two transfusions were done, but without success. Here transfusion should be of great benefit, for the condition is analogous to an acute hemorrhage, in that carbon monoxide combines very readily with the red cells,—much more so than does oxygen. Therefore, the oxygen carriers of the blood are as effectually removed from the circulation as by hemorrhage. By transfusion you supply normal red cells and

so benefit the patient. These cases should be bled at the time of the transfusion; their blood clots easily, and bleeding may be difficult, but if the patient is used as though a donor, the tube may be filled, removing as much blood as desired without difficulty, and then transfused into the same vein. Transfusion for these cases is seldom taken advantage of, and yet it is the proper procedure in severe cases, and should be done promptly. It is hard to impress medical men of this fact, and the cases continue to die on the medical side of the hospital without even trying transfusion, usually because no donor is available.

#### TYPHOID FEVER.

Occasionally transfusion is of value in hemorrhage arising from this disease when the patients are not too septic, and it is of value occasionally in eclampsia.

#### PRIMARY ANEMIAS.

First, the more acute primary anemias, such as acute lymphatic leukemia. Here transfusion is of no value, except possibly to prolong life a variable length of time, a matter of a few hours to a few weeks, as a rule. I have transfused one case of this type nine times at ten to fourteen day intervals, literally keeping the patient alive for four months. Nevertheless, except in rare instances, it almost seems unjustifiable to transfuse these cases. Needless to say, it should never be done without a most careful explanation of the situation to those concerned.

Second, concerning the use of transfusion for the more chronic primary anemias,—pernicious anemia. We know that transfusion, like all other treatment, is of no permanent value; but repeated transfusions in this condition will, without question, prolong the patient's life. We see remissions in pernicious anemia, both without treatment and with medical treatment, but this improvement is usually gradual. A remission brought about by transfusion usually takes place by crisis, whereas a medical remission comes about by lysis.

I might sum the situation up in this manner,—that in *my opinion* transfusion alone offers as much for pernicious anemia as splenectomy with or without transfusion, and does not carry with it any of the dangers that splenectomy carries. I am further of the opinion that splenectomized cases later requiring transfusion do not respond to the transfusion as do cases not splenectomized. I am in accord with the fact that this does not agree with the opinions of other observers. Nevertheless, this has been my observation, and it now seems to me that end results of splenectomy hardly warrant the operation. To be sure, the procedure has only been on trial. Personally, I think that my results with transfusion alone for this condition are as good as those with splenectomy, and that the remissions have lasted as long, or longer, and, what is more important,

there has been no immediate death, and, with rare exception, very marked improvement, but always variable as to the time this improvement has lasted, the time being from a few days to nearly two years.

I am fully aware that I have said nothing concerning the treatment of pernicious anemia that has not been duplicated by medical treatment. Nevertheless, such results are found only in a few scattered cases. I have observed several times following repeated transfusions for primary anemias that finally a severe reaction of one sort or another has taken place, both when the same donor has been used, and when a different donor has been used. These patients have then died within a few days. I have never seen this occur until four or more transfusions had been done. Similar phenomena have also been observed at times when not preceded by transfusions, as an end result of the disease. I cannot give it any explanation; but this should be remembered in doing repeated transfusions for pernicious anemia. I can only repeat that transfusion offers more for pernicious anemia, although this is little, than any other form of treatment, and that it usually brings about a remission by crisis, whereas medical treatment or no treatment brings about a remission by lysis. Frequently there is a red cell storm, the red cells going to eight million or more. The benefits of transfusion for pernicious anemia are not to be judged by red cells and hemoglobin, but by what the patient can do following the transfusion. Care should be taken in the amount of blood given for pernicious anemia, for too much blood may cause plethora and an aplastic state, rather than stimulate red cell production.

"Has transfusion any dangers?" Its dangers are, first, acute dilation of the heart, which can always be avoided by care in the carrying out of the operation. Its other dangers are those of serum reaction and so-called anaphylaxis. These can usually be avoided by careful preliminary blood grouping or iso-agglutination tests. Skin reactions will help in avoiding anaphylaxis.

"As to the donor, who shall it be?" It is not at all necessary that it be a relative, but it should be a healthy, robust person, free not only of a positive Wassermann, but also free of clinical signs of syphilis. Likewise one of compatible blood, as determined by careful preliminary tests, which should always be done, except where time precludes these tests. Even in the most urgent emergencies, agglutination tests may be done within 20-30 minutes.

#### METHODS OF TRANSFUSIONS.

As to methods of transfusions, there are many, and it was soon after the publication of the method to be described that many other methods were published, some of them closely resembling this method, but leaving out essential features. No one of these methods has been an improvement, in my opinion, upon this method

It meets the requirements of any case and under any circumstances. Any method that is so flexible as to allow transfusion in an attic room without an assistant, or to be done with the operator, recipient and donor all on the same bed, or under circumstances requiring donor and recipient to be in different rooms, leaves little to be desired.

Nevertheless, one can best do transfusions by making himself familiar with whatever method best suits his purposes, and this means making himself familiar *with details*, and not the evident things of the technic.

As to the *citrate method*, I will only state that originally Mr. Brown and myself discussed the use of the citrate method as it has been used in laboratories for years, but saw no reason for using it with this method. It seems to me that for certain cases, citrate transfusion defeats its own purposes, and so far as I have observed and can learn from reading, reactions of more or less severity, such as chills, are decidedly more common following citrate transfusion than following whole undiluted blood transfusion. Furthermore, massive transfusion of citrated blood may be dangerous, for whereas the percentage may be low, the total quantity of citrate in massive transfusions may be considerable. In only three cases where iso-agglutination tests had been done were there any reactions of note. In fact, even the slightest reaction has been rare, and I believe the method used is in some part responsible. I do not mean to say that slight reactions never follow. Blood may be injured as well as soft tissues; blood is simply more liquid. I am under the impression that drawing blood through needles of comparatively small bore and then forcing it through needles into the patient must to some extent injure the blood, and thus be more liable to cause reactions, although these may be slight. Without doubt, citrate methods have their place, and it is for the individual man to choose those suitable for his purpose, as previously stated.

#### PARAFFINING THE TUBES.

This really amounts to filling partially the warm tube with sterile paraffin, allowing a little to run out the cannula end, and running the remainder back into the receptacle, through the side tube. In detail, the tube is wrapped in a towel and sheet wadding, sterilized in an autoclave, and the paraffin mixture is sterilized either by boiling in a water bath or in an autoclave. (Vincent's mixture, stearin, paraffin and vaseline, in the proportion of 1-2-2, or 54-degree paraffin may be used as well.) Personally, I always keep my tubes paraffined, ready for use, and they are paraffined by a nurse. Having scrubbed up, some one lays open a sterile package containing the tube, the paraffin is kept melted in a water bath, and the tube is moderately heated over one or two alcohol flames. (Not too hot; I find that a

Bunsen burner is too hot.) Then remove the cork and nearly fill the tube with the melted mixture,—the more the easier to do. Allow this melted mixture to run around inside the tube and over the surface of the cork, and a little to run out of the cannula end. Then turn it upside down in such a way as to allow all the paraffin to run back into the tube and out the side bar into the paraffin jar. If there is difficulty in the cork not fitting securely, remove the cork and cover with a piece of gauze, trimming away the outside edges of the gauze. With a teaspoon or medicine dropper seal the junction of the cork and glass on the outside with paraffin. It is much better and easier to let the paraffin run back out of the cannula into the tube than to draw out the last drop from the cannula with a piece of gauze, as first described. Take an alcohol sponge and rub over the tube so that it may cool more quickly.

The tube is now replaced in the sterile package and pinned up, ready for use. I always clean my own tubes, and there is no necessity for breaking them. However, should a cannula happen to be broken, it can be repaired.

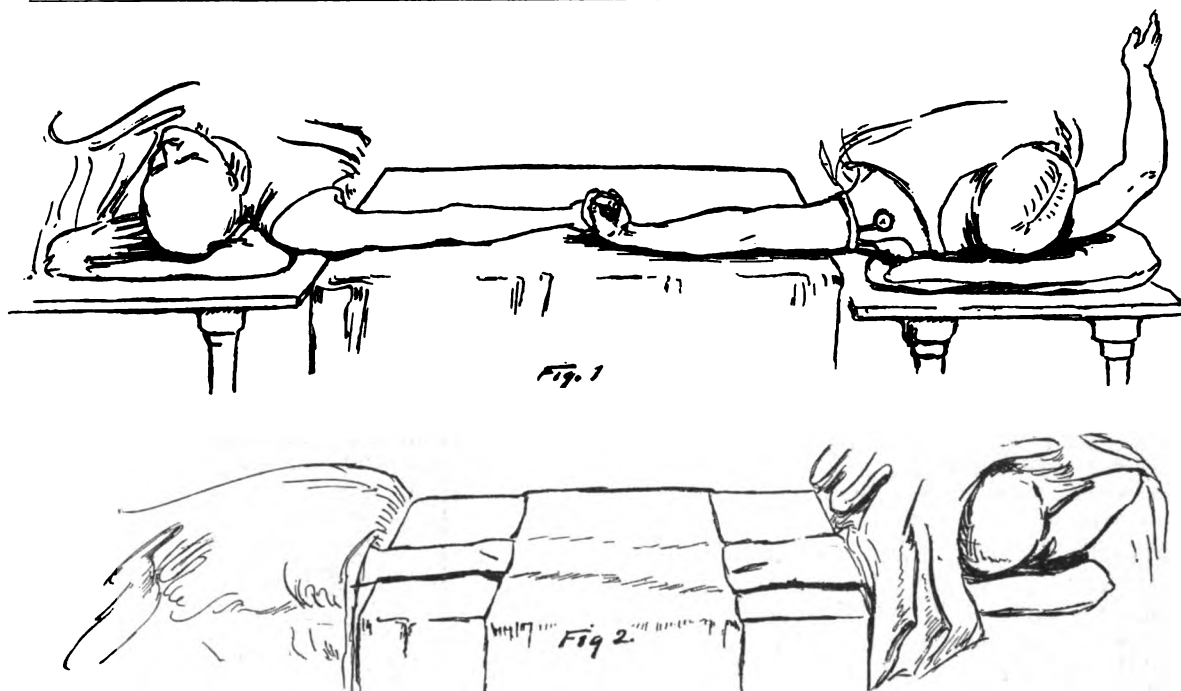
#### CLEANSING THE TUBES.

If you have very hot running water, the tube can be cleansed with the greatest ease. If you allow the blood to stand in the tubes, or if the tubes are left in water, cleaning will be difficult. When through with the transfusion, have steaming hot water from the tap run through the tubes. I do this before removing my gloves. First, allow the water to run through the cannula end, so that the paraffin melts and carries the blood back with it into the tube. The cork being removed, the water is allowed to run out. The rest of the paraffin is cleaned out in the same manner. Then, pouring in some tincture of green soap with hot water, shaking the tube and afterward rinsing until the tube is clean, is all that is necessary. The tube is then pinned up, ready to be re-sterilized.

*Having the tube sealed with glass at the large end is a distinct disadvantage. This was naturally one of the first things discussed by the originators, and was cast aside as complicating the cleaning and paraffining of the tube. After a very extensive experience, I find no reason for changing the tube as originally designed.*

A most satisfactory way of bleeding patients is with this tube, using the patient as a donor, allowing the tube to fill, emptying through the cork end by depressing the tube without removing the cannula from the vein. This process is repeated until as much blood as desired is removed. It is not at all necessary to cut down on the vein for this, but a needle may be attached to the cannula.

Although it is not necessary for patient and donor to be close together, and in many cases they should be separated because of infection, and so forth, it is a distinct advantage to have a precise arrangement under most circumstances.

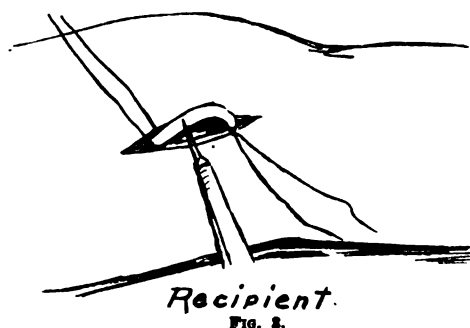


The most convenient method of arranging and draping the patient is shown in Figs. 1 and 2. If using the donor's left arm and the patient's right arm, the operator should stand on the side of the table towards their heads. If using the opposite arms, he should stand on the opposite side of the table. In this way the operator will not work left-handed in the handling of the tube. To be sure, one may use the same arms, or any arrangement desired, but the arrangement described is decidedly the most efficient. The arms are cleaned with soap, water and alcohol, rather than with iodine, which obscures the veins. A tyco's blood-pressure band is placed high and *upside down* on the donor's arm, as shown in Fig. 1. The diastolic pressure of the donor has previously been determined. When filling the tube, the blood-pressure is kept a little below the diastolic pressure. For illustration: If the diastolic pressure is 70, the blood-pressure is kept at 60 to 65. The air is let out of the band when not filling the tube. This gives absolute and scientific venous congestion. A rubber tube may be used as a tourniquet, but it is frequently put on too tightly, and if used, should be applied just tight enough to give venous congestion and not arterial obstruction. (This use of the tyco's band has previously been published. There is no method so efficient of obtaining Bier passive congestion, the showing up of varicose veins and other things, as this manner of using the tyco's band.)

Briefly, the method consists of inserting the cannula of the tube into a vein, allowing it to fill, removing and inserting the cannula into the recipient's vein, and emptying the tube by air pressure. This may be done either by open exposure of veins or by needle attachment. In minute detail, the technic is as follows: The

skin over the veins just below the elbow in the arm of the donor and recipient is injected with novocaine. The veins are exposed cleanly through incisions not over one and one-half inches long. Longitudinal incisions, if the veins are easily visible, if not, a transverse incision, will more readily expose the vein. For this I use merely a knife and small blunt-pointed scissors, passing the points of the scissors along each side of the vein, then under the vein, and spreading. A ligature is placed within the blades, pulled through and cut, exactly as for intravenous salt-solution. The diastolic blood-pressure as described is now established. The donor's vein is now tied off proximally, and the distal ligature is left to be used as a clamp by merely raising it a little after the vein is opened. If there is no assistant present, the weight of a hemostat hanging from the ligature will control the vein.

The donor's vein is now transfixed by a cataract knife and a slit made (Fig. 3). The cannula of the tube is inserted into the vein of the donor for about one-half inch to one inch and held upright until filled by venous pressure (Fig. 4). This usually takes not over two



Recipient.  
FIG. 2.



FIG. 4.

minutes for a 250 cc. tube. If not filling well, it probably means that the end of the cannula is against a valve or the side of the vein. The donor is instructed to shut and open his hand tightly and slowly. This, perhaps, hastens the inflow.

While the tube is filling, the vein of the recipient (without the aid of any tourniquet) is tied off distally, the proximal ligature being used as a clamp, and the vein opened. By this time the tube is full, and, the air-pressure having been released, is withdrawn and held on its side with the side-tube uppermost, to prevent the blood from running out. (Thumb over end of side-tube, finger over cork, Fig. 5). The can-



FIG. 5.

nula is now inserted into the vein of the recipient and held in an upright position. (Thumb under side-bar at junction with cylinder, finger over cork, Figs. 6 and 7). Be sure the vein of the recipient is bleeding before inserting the cannula. The little angular forceps I have had made are a great aid in introducing the cannula into the vein, especially when the lumen is small. (Figs. 6 and 8.) An actual cauterizing bulb is attached to the side-bar, and by a little pressure the tube is emptied. (Fig. 7).

If one should not observe the manner of holding the tube as shown in the illustration, and by any accident the cork should fall out, the palm of the hand should be held over the tube.

The cannula is withdrawn while there is still a little blood left in it. More tubes may be filled and emptied, if desired, using the same



FIG. 6.

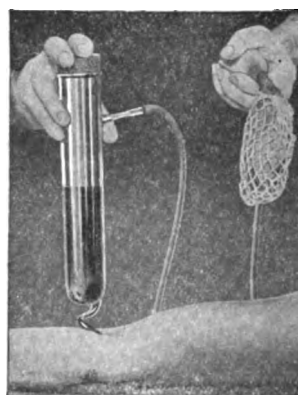


FIG. 7.

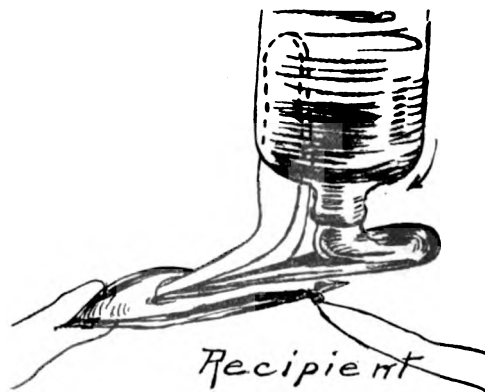


FIG. 8.

veins, or the same tube may be used over and over, first rinsing it out with cold sterile salt solution. It is better to point the cannula toward the hand of the donor rather than toward the heart, though both ways may be used. The veins are usually tied and cut, but if desired the slit may be sutured. If, for any reason, arterial blood is to be preferred, the radial artery of the donor may be used, as was originally done.

I have sutured and used the same vein in both donor and recipient four times, finding it patent each time. When exposing the vein, its direction should be noted, and *one cannot expect the tube to fill if the pump is attached while*

*the tube is inserted in the donor's vein.* Many other veins in various parts of the body may be used.

I have several times transfused patients by pointing the tube toward the hands, that is, injecting the blood against the circulation. In no case was there any evidence of congestion of the hand. This seems to me to be another argument that circulation is not reversed when an arterio-venous anastomosis is made. For, if it were reversed, it would seem to me that the hand would become somewhat congested when 250 to 300 cc. of blood is injected in this manner below the elbow.

A criticism of this method has been that it requires a short incision over the veins. This is not at all true, as I published in May, 1915, that the tube could be attached to a needle in suitable cases. Personally, I prefer a short thick-walled rubber tube connection, when using a needle, rather than have metal in connection with the glass. (Fig. 9). By this means I have filled five tubes without once removing the needle from the donor's vein. The recipient's

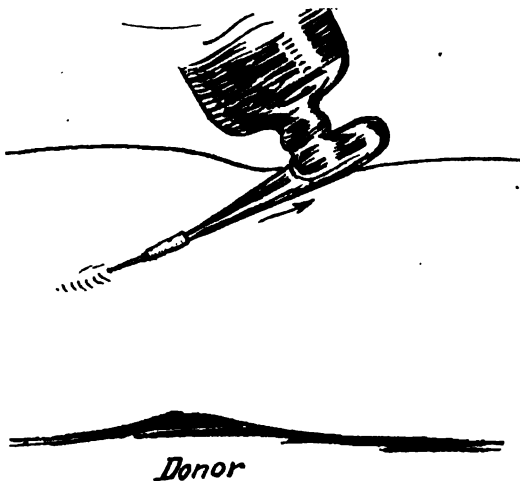


FIG. 9.

vein will usually require incision. *It is not at all necessary to paraffin or prepare in any way the needle and rubber tube connection, except to boil them and moisten with a little salt solution or sterile water just before using.* I have frequently filled the same tube two or three times without washing the tube with sterile salt solution. However, I prefer to use a clean tube for each tube full of blood desired.

The tubes should always be kept sterile and paraffined ready for emergencies. Several times I have done three transfusions in one day, and on one occasion four transfusions, so that the necessity of keeping plenty of tubes ready is easily seen.

As to the technic for new-born babies, the tube is filled with 100 to 150 cc. through a needle inserted into the donor's arm. (Fig. 9). Another needle is passed into the longitudinal

sinus of the baby through the posterior portion of the anterior fontanelle (Helmholz), the needle in line with the sagittal suture. Its entrance into the sinus is determined by the escape of blood through the needle. The baby's head being held firmly, and the needle being held firmly, the tube full of blood is now connected to the needle, and with gentle pressure the amount of blood desired is injected. This should be done slowly, so as not to increase intracranial pressure. The tube is now detached from the needle and the needle removed. Very slight pressure will stop any oozing from the sinus. This whole procedure takes not over three to five minutes. As spoken of above, there will be times when this most simple procedure cannot be used. In these cases, the tube is filled with the needle connection as described, and either the external or internal jugular vein of the baby is used. Using the internal jugular is much easier than one would expect in practically all cases, although in such cases the technic is much more difficult.

#### TRANSFUSION CONCLUSIONS.

Transfusion may be said to be of value as follows:

Its greatest field of usefulness is for,

1. Acute secondary anemia, that is severe hemorrhage. For so-called "shock," uncomplicated by hemorrhage, it may be of great value, but too much has been claimed for it here. For hemorrhage of new-born babies, transfusion is specific and the use of the longitudinal sinus, as advised by Helmholz, is one of the most valuable advances of surgical technic. The tube is filled through the needle and emptied into the longitudinal sinus through the needle. For hemophilia transfusion is specific for the attack.

2. Chronic secondary anemia, frequently of great value. It is of no value in acute sepsis.

3. Acute primary anemia, such as acute leukemia, it is of no value.

4. Chronic primary anemia, such as pernicious anemia, of value, but only temporarily, and for variable length of time.

For pernicious anemia it is the most efficient method of treatment we have. Transfusion alone offers as much for pernicious anemia as splenectomy with or without transfusion, and carries none of the dangers of splenectomy. It usually brings about a remission by crisis, whereas other remissions come about usually by lysis, that is, slowly.

Reaction rarely follows transfusion of whole undiluted blood in my hands.

Reactions are very common after transfusion of citrated blood. Massive transfusions of citrated blood may be dangerous, for whereas the percentage may be low, the total quantity of citrate in massive transfusions may be considerable.



## BLOOD TESTS.

Wassermanns, especially of donor's blood, should be done when time allows.

Iso-agglutination tests should always be done, best in laboratory, between fresh bloods. Stock sera may deteriorate.

Transfusion without these tests may cause deaths, and even with these tests I have twice seen agglutination, the tests having been carried out by trained men.

In other words, there are undoubtedly serum reactions that we as yet do not know tests for.

A rough but fairly accurate bedside test may be carried out as follows:

*Donor's blood.*

1. 2 to 3 drops + oxalate ( $\frac{1}{2}\%$ ) or salt solution equals corpuscles.
2. 2 to 3 drops + distilled water equals serum.

*Recipient's blood.*

3. 2 to 3 drops + oxalate ( $\frac{1}{2}\%$ ) or salt solution equals corpuscles.
4. 2 to 3 drops + distilled water equals serum.

The oxalate or salt solution keeps the corpuscles free.

The distilled water lyses the corpuscles and gives serum.

On a hanging drop slide,

One drop of number (1) is added to one drop of number (4).

This gives donor's corpuscles to recipient's serum.

The same with (2) and (3) gives donor's serum to recipient's corpuscles.

These are observed for from 20 to 30 minutes, with microscope or hand lens, for clumping. If marked, this may be seen with the naked eye.

Blood tests, I believe, are not necessary for new-born babies, as bloods are not usually grouped until the child is about two years old.

Reactions are more likely to follow repeated transfusions, especially after four to five transfusions have been done and whether with the same or different donor.

I understand that transfusions at the front are not being done when urgently needed because of difficulty in having blood tests carried out. I should never hesitate to do a transfusion under such circumstances, for many more patients will be saved by doing the transfusion without blood tests than will be saved by not doing a transfusion with blood tests.

I wish to close by quoting a remark made by Dr. Crile several years ago: "Judiciously employed, transfusion will surely prove a valuable, often a life-saving, resource; injudiciously employed, it will surely become discredited." And I add that the reputation of transfusion is now too firmly established ever to be discredited.

## THE SURGICAL TREATMENT OF EMPYEMA.\*

BY WYMAN WHITTEMORE, M.D., F.A.C.S., BOSTON.

DURING the last five years I have been especially interested in thoracic surgery, and what I have to tell you tonight about empyema is based entirely on my own work at the Massachusetts General Hospital. My ideas of the correct surgical treatment of empyema have changed so much during this last year that this paper is based almost entirely on last year's work.

I shall limit myself to the surgical treatment of empyema,—not going into the signs, symptoms or causes. I shall avoid statistics as much as possible, believing that a man's impressions from doing a considerable amount of work in a certain subject are about as valuable, if not more so, than his statistics.

The old operation for acute empyema was an exceedingly uninteresting and simple one. But there was a mortality of about 20% following operation, and 20 out of every 100 patients that left the Mass. General Hospital alive became chronic cases. These figures may seem very high, and I believe they are higher than those in private practice. But a hospital patient, as a rule, does not have the diagnosis made as early or the operation done as soon as a private patient. And private patients, being in better circumstances, are able to carry out their convalescence with more care. I do not think these figures are extraordinarily bad when compared with those of other hospitals. Although I have not looked up this question very carefully, the mortality at one large New York hospital is at least 20%, and at another hospital not far from here, it is about 29%. However, these figures were bad enough to arouse considerable desire to better them, and with each effort to improve our results, the subject has become more interesting.

There is no question but that the old way of excising a rib, will, with good after-treatment, cure many patients, but the correct rib must be taken out and drainage established at the bottom of the cavity,—sometimes it is necessary to take out a second rib. When I do this operation at all, which is only very occasionally, I open up the pleural cavity between the ribs, put my finger in, retracting the ribs if necessary, and explore the cavity; drainage is then established at the bottom by excising a section of a rib. This can be done very rapidly and accurately with one finger inside the pleural cavity. It avoids taking out an extra rib, gives one a good idea of the extent of the cavity, and also establishes perfect drainage.

The danger following this operation (granted the patient does not die) is that the lung will not fully expand, become covered with a pyogenic membrane,—and then the case is chronic. It seems possible, and indeed very probable, that one important cause for the lung not expanding

\* Read at the Mid-Winter Meeting of the Brookline Medical Club, February 4, 1918.

fully is that positive pressure is allowed to enter the chest through the drainage tube. In order to overcome this, patients were put on "blow-bottles,"—but few, if any, patients are in condition to use these during the first forty-eight hours after operation,—and this gives the lung an excellent chance to become adherent in a partly collapsed condition. And this is granting that the lung is not already partly collapsed at the time of operation. Once the lung is in this condition, with a thickened visceral pleura covered with a thick pyogenic membrane, I have never seen "blow-bottles" do much good. The convalescence is often an exceedingly trying and obscure affair to the surgeon. A patient will do very well, with normal temperature for a week or ten days, and then suddenly the temperature will go to 102 or 103. We formerly asked the help of the medical man to solve this condition, and every time that I have done so he has reported that the chest has not been drained sufficiently and that there is a collection of pus not draining. Taking his word as law, I used to do a second operation, but usually found an old cavity surrounded with a thickened membrane which was draining perfectly. There are various explanations of this condition, and one man's guess is as good as another's, and I frankly don't know just what does take place. There have been many devices made to form a valve that would prevent the positive pressure entering the pleural cavity. At one time a rubber dam was arranged over the drainage tube, again the use of a flap of skin was tried, but without success, at the Mass. General Hospital.

On the other hand, the following method has been used in the *desperately* sick cases with much success. Under local anesthesia the chest is aspirated between the ribs with a very large trocar; a tight-fitting catheter slipped through this and the trocar removed. The catheter is attached to a long rubber tube that goes into a bottle half filled with water. The end of the tube is under the surface of the water. The catheter is sewed tightly into place. In this way the negative pressure in the pleural cavity is not changed, and with each expansion of the lung the pus is forced into the bottle. The catheter will stay tight with the chest wall for about a week. The amount of drainage for each 24 hours is measured. At the end of five or six days, an electrical suction apparatus is attached to the tube. This works constantly, and when the 24-hour amount of pus is down to 2 oz., I remove all drainage apparatus.

This method will probably cure the very early cases, in which there is only a cloudy serum containing a high leucocyte count, but in the cases in which there is thick pus and lymph, and where the lung is partly collapsed, it is not done with the idea of curing the patient, but of tiding him over his desperate condition.

I have done a good many cases in this way—2 have died—(both desperately sick cases before

operation) one a woman with double pneumonia and a streptococcus empyema, who died four or five hours after operation, and one an infant less than a year old, who had a double bronchopneumonia, and who pulled the tube out. One case became chronic as I was unable to do a second operation owing to the patient's having syphilis.

In the cases *not so desperately* sick the Lilienthal operation is the one of choice. In this operation a very long incision is made between the ribs—one extending from close to the vertebral column to within an inch or two of the sternum. The ribs are spread wide apart with a rib spreader. This gives an opening large enough to put one's whole hand into the cavity. Lilienthal sucks out all the pus and lymph with a suction apparatus. As we have none in the operating room, I wipe out the pus and lymph with gauze, and then remove all the pyogenic membrane covering the costal and visceral pleura. The surface of the lung is then a bright red color, the greyish-white membrane being entirely taken away. With positive pressure from the gas oxygen machine or intertracheal ether, the lung is forced to expand fully, and it actually does come up to the chest wall. The wound is then closed tight except for a cigarette wick at either end of the incision.

Before one is familiar with the technic and sees how well patients go through the operation, one is apt to think this is a very dangerous and radical operation to put these patients through. It is surprising to see how little shock there is, and how much one can do to the surface of the lung without upsetting the patient's condition. Following the operation the patients are more comfortable than following any other operation for empyema,—the convalescence is much shorter, and they are healed up, as a rule, in from three to four weeks. Following the old method of operation on these cases, they were in the hospital six or seven weeks (or even longer) and then left with a drainage tube in, and reported to the out-patient department for some time—even if they did not become chronic with a persistent sinus. Following the Lilienthal method there is often no discharge except a little pussy serum and at the end of a week or ten days all drainage is removed. The last two cases that I have done left the hospital at the end of three and one-half weeks, with no discharge at all, and the wounds entirely healed up.

Although Lilienthal has been doing it for a couple of years, it is a very new operation in this part of the country, and I have done only 12 cases. They have all done well except one baby. In this case, the afternoon following the operation, he was sitting up eating his supper, the following day he was playing in his crib, and the next day while I was making a visit he had a convulsion, became paralyzed on one side and died that afternoon with symptoms of a cerebral embolus.

Of course, one's first thought is to do something that will relieve the immediate septic con-

dition—in other words, save the patient's life, and secondarily, to do something that will prevent the case from becoming chronic. This can be combined at the Lilienthal operation in many cases, and it is only in the desperate ones that I believe it necessary to wait a few days or a week after draining the chest, before doing the radical operation. But I want to lay stress on the fact that this or some other radical operation must be done very early in order to prevent a bad result.

It is important in all operations for acute empyema, when there is a large amount of pus, to allow it to escape slowly. I know of two deaths on the operating table after making a large opening and allowing the pus to escape very rapidly. Although there was no autopsy on either case, yet it seems to me the deaths may be explained either from an acute dilatation of the heart or possibly from a so-called "fluttering of the mediastinum." Given a case with a large amount of pus and the lung collapsed, letting the pus out very quickly suddenly takes away the support of the mediastinum on one side. This is seen and spoken of especially in the one-stage operation of lobectomy and is a very distressing thing. When this happens or when the patient's condition becomes alarming through difficulty in breathing, on account of a large, open pneumothorax—if the edges of the wound are brought together and held tight for a few minutes, the condition rapidly improves, and then one can again go on with the operation.

The first question that naturally comes up is when to operate? Operate as soon as you can make a diagnosis. One would probably do well to leave the diagnosis in the medical man's hands, but I believe one should operate when the aspiration fluid shows a cloudy serum with a cell count of 50% or more polynuclear leucocytes.

The prognosis depends on the patient's condition and the kind of germ that causes the infection. In my experience the streptococcus cases do very badly, but fortunately they are not numerous in civil life. The pneumococcus cases do better than any others. There is a higher mortality in infants and children than in adults.

The after-care is very important. All patients, following whatever operation you elect to do, should be made to use "blow-bottles" until the sinus is closed and they are entirely well. Fresh air and good food and certain breathing exercises should be insisted on. They should be carefully followed until entirely well and able to resume their normal life.

The mortality with these operations has been reduced from a little over 20% to 12%. There will always be some mortality, as many cases are in very serious condition before operation; but early diagnosis and early operation will help to reduce the bad results.

It may interest you to hear what autopsy in these cases showed from 1901 to 1911. Out of

30 autopsies, 14 died from septicemia, 5 from pneumonia, 3 from pyemia, 1 from peritonitis, 2 from multiple abscesses of the lung, 1 from defective closure of the foramen ovale and thrombosis of the left pulmonary artery, and in 4 no definite cause was found. The commonest cause of death was septicemia—the majority being streptococcus septicemia and a few pneumococcus septicemia. It seems to me that in the septicemia cases this was very likely only a terminal affair, as in several of my cases blood culture taken a few hours before death showed a streptococcus septicemia, whereas blood culture taken 24 to 48 hours earlier showed no growth.

#### ENCAPSULATED EMPYEMA.

There are occasionally cases in which there is a suspected small area of pus in the chest, which cannot be definitely located. These should be opened up wide and thoroughly explored. The guide to a small amount of encapsulated pus—between the lobes or between the diaphragm and the lower lobe—is adhesions. After finding these the general pleural cavity should be walled off with hot, wet gauze, in exactly the same way as one walls off the abdominal cavity before opening an appendix abscess, then the adhesions may be broken through and the abscess cavity opened and drained.

I believe an exploratory thoracotomy should be done as readily as an exploratory laparotomy. The thoracic cavity may be opened and explored just as safely as the abdominal cavity. And if nothing pathological is found, it can be closed up tight and the patient recover just as readily as from an exploratory laparotomy.

It is better to do this exploration under positive pressure, as this will prevent the collapse of the lung when there are no adhesions present. Of course when there are adhesions the lung will not collapse anyway, but no one can tell, definitely, before operation whether or not these are present. In order to convince myself and the anesthetist at the hospital that it was better to do an exploration under positive pressure, I did two explorations within a week—one under gas oxygen and the other under intertracheal ether. On opening the pleural cavity in the first case (the one done under gas oxygen) there was a tremendous thrashing back and forth of the lung, the patient became shocked very quickly and was put to bed with a pulse of 170 to 180. The other case, that done under intertracheal ether, had a much larger exploration done—there was no thrashing of the lung and her pulse did not go above 85 either during or following the operation.

The best position for exploring the chest and for nearly all thoracic operations, except when the process is definitely anterior in an upper lobe, is the *prone position*. The patient is placed flat on his face with arms extended up alongside his head. This gives a very large

field to work in, and for some reason the lung does not tend to collapse so readily as in other positions. Then, too, the sound lung can work easily and normally, whereas in any other position it is underneath and is handicapped in its efforts to expand. (In cases of interlobar empyema that have perforated into a bronchus, the head should be lower than the trunk, so that pus can and will be draining out the patient's mouth during the operation. The catheter in intertracheal ether aids rather than hinders in accomplishing this end.) This position allows one to explore readily, between the diaphragm and the lower lobe, the interlobar fissures, and the "Gutta" which is formed by the vertebral column, and the ribs. This is a very favorite place for pus to collect and one not often explored unless the patient is in this position.

#### CHRONIC.

When a case should be called "chronic" is largely a matter of individual opinion—and may not be of much importance—but, I believe, many cases are chronic before they have ever been operated on. When a cavity is lined with a thick pyogenic membrane and containing thick pus and lymph, there is certainly nothing very acute about it, and I think that one reason why so many cases became "chronic" in the past was because surgeons did not recognize them as chronic in the beginning, and did the same operation regardless of whether a case was really an acute one or a chronic one. These cases I have already dealt with in the early part of this paper, and so for the sake of discussion I shall consider, tonight, as chronic only those cases that have been operated on and that have a persistent discharging sinus.

A perfect cure is one in which the lung expands fully, there being no discharging sinus, and the patient being able to resume his normal life.

Although the Schede operation, in which the ribs overlying the cavity and the parietal pleura are removed, may result in an entirely healed chest—so that there is no discharge—yet the lung never expands. About 50% of these cases heal up.

There is one way to get a perfect result—do a Schede operation and then do a complete decortication of the lung. Turn up a large skin and muscle flap—take off all ribs overlying the cavity—remove the costal pleura, which is often a third to a half an inch thick—then cut through the visceral pleura to the lung tissue and carry this incision across the lung. It is a remarkable sight to see this thin line of incision stretch wider and wider with each breath, so that in a few moments it is one-half to one inch wide with the lung trying to expand through it. The visceral pleura is then entirely dissected off the lung and with pressure from intertracheal ether the lung expands to the chest wall. Without any pressure it will expand about half way.

In some cases the dissection is very easy, as one finds a good line of cleavage; in others it is very difficult, there being no good line of cleavage—and one must dissect carefully and slowly. However, making a few small holes in the lung tissue does no apparent harm.

In the last case that I did, I changed the technic a little, and instead of resecting five or six ribs, I resected only one, and then cut through the others overlying the cavity and retracted them one side. This made the operation a little more difficult as my approach to the visceral pleura was not so good and it was harder to take off the costal pleura, but it left a better chest wall, as the ends of the ribs were brought together and one was actually fastened.

The wound should be closed tight,—a small rubber tube is placed at the bottom, but this is tied off. At the end of 48 hours, this is opened and the serum is allowed to escape and then is shut off again. To enable the lung to expand fully, it is necessary to close the wound tight. My hope is that the lung will become adherent or partly so when fully expanded, and this should take place within 48 hours.

These cases should be carefully prepared for operation, and some simple drainage operation may be necessary before doing the radical one. Last summer I had a Boston University student who had been operated on three or four times: drainage had never been at the bottom of the cavity, so my first operation was to find out just what I was dealing with and then drain the cavity at the bottom. He went home for three weeks and then came back and had a decortication done. He did perfectly and is entirely well today and can do anything in the line of exercise he ever could,—in fact, I have just heard that he has been accepted in the draft for the Army.

The after-care is about the same as that following operation for acute empyema. The use of "blow-bottles," breathing exercises, good food and fresh air should be insisted on.

Here again the question comes up, When should one operate on these cases? The best answer is that one should never have any such cases, and with perfect surgery I don't think we will in the future. But to be practical, we know there are many such cases now. Two years ago, I thought one should wait one year after the original operation—one year ago I thought two or three months. At present, I think, from the original operation and from the patient's convalescence in the hospital, one should be able to decide whether or not he will get entirely well or need further surgery. If one decides that he needs another operation I think the radical operation should be done in a week or so after the first operation. The bad results have come from waiting too long before doing a radical operation.

The earlier the radical operation is done the better the prognosis. Children and young adults—up to 30 or 35 years—do better than

older people. My best cases have been in those under 30. I have had no mortality, yet two patients ranging in age from 40 to 50 have not healed up entirely, but their lung expansion is larger than before operation. Both these cases were poor, ignorant foreigners that we could not handle properly after they left the hospital. The mortality following decortication of the lung has been reduced from 20% to 0. But I should add that I have done only eight such cases this last year. However, this does not seem such an insignificant number when one realizes that between the years 1901 and 1911 there were only five such cases done at the hospital.

I feel very sure that the best results in both acute and chronic empyema (following a decortication) are to be found in those cases that are closed up practically tight following operation. This gives the lung its only chance to expand. Surely, draining a chest with one or two large rubber drainage tubes, in and out of which positive air pressure rushes with each respiratory movement, is no longer modern surgery.

If you will stop a minute and think of the mechanism of respiration, I think you will agree with this statement. The diaphragm plays the leading part in respiration. When it moves downward it sucks air into the lungs, and they can easily expand on account of the negative pressure in the thoracic cavity; when it moves upward it forces the air out. Now, when a patient has a large hole in the chest wall the lung cannot expand because positive air pressure is, and must be, sucked in through the opening at the same time that air is being sucked into the lung. Therefore, it very soon becomes partly collapsed, a cavity is formed, the case becomes chronic and cannot be cured until something is done to overcome this collapsed condition.

My idea of the use of "blow-bottles" is not primarily to make the lung expand, as I do not believe that they do this, but to force the diaphragm to work very hard,—and this is accomplished in the effort of blowing the water from one bottle to the other, and at the same time whatever pus or serum has collected in the chest cavity is forced out. A very good illustration of this is seen following the Lilienthal operation. After removing the wick there is a small sinus,—and the patient is urged to use "blow-bottles" as often as he can, but especially when the dressing is changed. At this time, when blowing hard, the pus is actually driven out of the chest with considerable force.

Finally, I want to say a word or two about anesthesia, as I find this is a very important part of the operation.

Paravertebral anesthesia is the most satisfactory of any regional anesthesia in thoracic surgery. It is difficult to resect ribs with any ordinary local anesthesia without causing some pain to the patient. But with paravertebral it can be done very easily. It seems to me to be *ideal* in some of the old chronic cases and in the ex-

tremely sick, acute cases in which one is going to do some simple drainage operation. Unfortunately, the supply of novocaine gave out at the hospital some time ago and so I have done only five such cases; four were perfect, the other not so successful, but in one a large resection of ribs was done, and I could operate just as freely as if the patient had been under a general anesthetic.

Gas oxygen appeals to me very much,—I use it now in practically all cases of empyema. I have used it in old people and in infants, and have never seen any bad results. One can get enough pressure to expand the lung fully in doing a Lilienthal operation, but following a decortication in an old chronic case, the gas oxygen machine does not give enough pressure to expand the lung quite fully to the chest wall. So it is probably better to use intertracheal ether. This latter method of anesthesia is very simple and effective and I have never seen any bad results.

All thoracic surgery is a most interesting field to work in. Our ideas are constantly changing and advancing. One must be an enthusiast and an optimist, indeed, as there are constantly very discouraging things and patients to deal with. But I think the last year has seen progress made, at least in the immediate mortality. Whether or not these operations for empyema will prove to be the final correct ones the future alone can tell.

## CLIMATE IN TUBERCULOSIS.

BY H. F. GAMMONS, M.D., CARLSBAD, TEXAS.

CLIMATE is the sum of all the meteorological conditions of a locality. The nearness to bodies of water, the latitude and altitude and prevailing winds are of the most importance and, in tuberculosis, the proximity of smoke- and dust-producing industries must be considered.

The physiological effect of hot climates is to increase the activity of the skin and liver, to stimulate the nervous system and to cause sluggishness of the muscular system and digestive system. Cold climates stimulate the digestive and muscular systems.

Live air is the most nourishing, but drafts are to be avoided as they tend to produce not uniform circulatory changes. The air in a place of great altitude contains a smaller amount of oxygen to a certain amount as compared with air of lower altitudes, due to the fact that the molecules of air are more separated at higher than at lower altitudes.

Air in pine districts was formerly thought to be very helpful in treating tuberculosis, and Dr. Mary Lapham and other observers in North Carolina and other pine districts report very good results at their sanatoria, due, as they seem to think, to the air, in a great part.

The question of climate valuation in the treatment of tuberculosis has received many and varied answers. On account of a lack of concrete facts, this question bids fair to be unanswered in a definite and convincing way except to men who have had an opportunity to study the disease in different climates and especially comparing damp and dry climates.

Klotz<sup>1</sup>, after studying group cases in Vermont and California, concludes that greater and more lasting benefit would be obtained under the climatic conditions of California than under those in New England.

Trask<sup>2</sup> says "the best climate for one affected with pulmonary tuberculosis is that which furnishes a favorable atmosphere for the greatest number of hours of the day and the greatest number of days of the year. The favorable atmosphere must be cool, or at least it must not be hot for long at a time, nor must it be too cold, although cold is less objectionable than heat."

Cornick<sup>3</sup> says "If, despite the wonderful advancement of modern chemistry, a century's time had to elapse from the discovery of oxygen until the new element, argon, was found a few years ago, to be also a constituent of the atmosphere, we may hardly hope in the current generation to reach a universally accepted solution of all the mooted questions regarding the influence of climate on pulmonary consumption. While there is no general agreement, for example, among climatologists as to whether the aerial rarefaction of high and sunny mountain climates, where many consumptives get well, is to be regarded as a help or hindrance to the sunshine and dryness in accomplishing this result, there is one point, at least, on which there is substantial unanimity, namely, that in the climatic treatment of pulmonary tuberculosis the factors of dryness and temperature are favorable in proportion as they permit an open-air life in winter and summer, by day and by night."

Altitude was formerly thought to be a great help in the cure of tuberculosis and this was due to the efforts of Archibald Smith who, in 1848, went to the Andes to study climate. He found that there was more tuberculosis at Quito than at the higher mountain levels and consequently felt that there was an immune zone between the lower city and the higher mountain places. Observers in this country have felt that the value of climate was in altitude, but it has been proven that such is not the case and we know that tuberculosis is an economic and social disease.

It has been my pleasure to have served in two good sanatoria where climatic conditions are very dissimilar; the one, the Rutland State Sanatorium, located in the noted New England climate; and the other, the Texas State Sanatorium,

located in the arid Southwest. In Rutland we had, during my service, very few cavity cases and these tended to progress. In Texas most of our cases have, or have had, cavities which tend to heal or have already healed.

The signs in the chest in the Texas cases are more limited to irregular breathing, the catarrh is not as much noticed and in those cases with the catarrh of the bronchioles or alveoli, the adventitious sounds are fewer in number, diffused and of a crepitant character.

In Rutland I noticed more normal vesicular breathing and the adventitious sounds were more confluent and louder sounding.

In the Texas cases there is less fever, cough and night sweats, fewer laryngeal infections, mucous membrane colds and attacks of rheumatism.

In Texas we notice marked dryness of the mucous membranes, while in Rutland moist catarrh is the rule.

The very warm weather in Texas, which is of a not long duration, was very depressing, although probably no more so than the warm weather of the more humid cooler climates, while in Rutland the cold fall and winter months were very stimulating and patients seemed to do much better in the cold weather.

There is a prevailing optimistic temperament in the Southwest, due to the almost continual sunshine, and also there is a fixation of carbon in the system as the result of this sunshine which must have a very decided curative effect.

#### CONCLUSIONS.

A person with an ulcerative case of tuberculosis who has given his home climate a chance and at the same time has coupled the climate with other standard treatments for tuberculosis, such as fresh air at all times, rest, and diet and contentment of mind, and who is at a standstill, will, if he is financially able, unquestionably obtain good results in the Southwest. It is necessary, however, for such a patient to have all other factors necessary to the cure, such as rest, diet, etc.

If one is fortunate in being able to take the cure in one of the sanatoria of his vicinity under the proper regulations, it is better than to go to the Southwest and to be compelled to care for one's self or to "rough it."

#### REFERENCES.

- <sup>1</sup> Klotz: Group Studies in Tuberculosis under Different Climatic Conditions, *American Review of Tuberculosis*, Vol. 1, No. 2.
- <sup>2</sup> Trask: Reprint of *The Journal of Outdoor Life*, Vol. xiv, from *Public Health Reports*, U. S. P. H. Reports, Feb. 23, 1917.
- <sup>3</sup> Cornick: Some Personal Observations on the Management and Treatment of Pulmonary Tuberculosis at a Climatic Resort, *Texas State Journal of Medicine*, September, 1906.



### Book Reviews.

*Manual of Psychiatry.* By I. R. DE FURSAC, and A. J. ROSANOFF. New York: John Wiley & Sons. 4th Edition. pp. 522.

This revision of a very concise and useful book, owing to the war in Europe, and the difficulty in close coöperation caused by it, has been left to the American author by agreement. The chapters in the first part, dealing with etiology, history-making, general prognosis, prevalence of mental disorders, prevention, and medico-legal questions, and in the second part, those dealing with Huntington's chorea, cerebral syphilis and traumatic psychoses, are either wholly new or almost so. The chapter on general paresis is perhaps particularly well done, for not only is a distinct and clear picture given of the mental symptoms, but the physical ones are adequately described, and modern pathology and modes of testing are not ignored. The chapter on traumatic psychosis might well have been more full, as the chronic confusional mental states with delusions which not infrequently follow severe head injuries, deserve fuller description, as well as the dementia. On the whole, considering its brevity, we know of no more satisfactory book on mental disorders, and this manual, improved by this revision, will doubtless become increasingly popular and deservedly so.

*An Inquiry Into the Principles of Treatment of Broken Limbs.* A Philosophico-Surgical Essay, with Surgical Notes. By WILLIAM F. FLUHRER, M.D., Consulting Surgeon to Bellevue and Mount Sinai Hospitals. New York: Rebman Company.

This well printed and attractively illustrated book is distinctly worth reading. The author describes it as a "philosophico-surgical essay;" he should have added the adjective "historical," since the book abounds in references to the surgery of New York of 40 to 50 years ago.

The methods described were undoubtedly very effective in the author's hands: the fundamental principle of rapid reduction and immediate immobilization of broken bones is undoubtedly correct; and the addition of tin strips to plaster bandages in fractures of the leg might at present be adapted with good results. The author was evidently direct and original in his work, and his story is well deserving of its present form. The value of the volume is rather from the standpoint of collateral reading, than from that of a textbook; its sidelights upon the recent past are illuminating in the consideration of many of the strongly advocated measures of the immediate present.

*The Control of Hunger in Health and Disease.* By ANTON JULIUS CARLSON. Chicago: The University of Chicago Press.

Dr. Carlson presents in book form the summary of the work of himself and associates in regard to hunger and appetite. While the work has been published in scientific journals as it developed, the present book is not a collection of previously printed papers, but an entirely new production, in the light of the completed work. It is in a sense a monograph, although the treatment is never essentially technical. It is, indeed, a most happy thought on the part of the author to present his work in readily available form. Dr. Carlson's work is perhaps too well known to require extended comment. It may not be out of place, however, to emphasize the practical applications of many of his laboratory experiments. His careful differentiation between hunger and appetite is noteworthy. His sane conclusions regarding the use of bitter tonics will be instructive to most of the profession. In general the book is one of a very small group of publications, in which the author is able to present, in concise form, valuable and interesting subject-matter almost exclusively based on first-hand observations.

*Standard Surgical Dressings.* By NELLIE A. MACKENZIE, R.N. Boston: Whitcomb & Barrows.

This manual, issued by the Surgical Dressings Committee of the New England Section of the Woman's Department of the National Civic Federation, contains concise and accurate directions for making standard surgical dressings and represents practice employed in the work of the committee at the Peter Bent Brigham Hospital, Boston, in the preparation of dressings for the Entente Allies in the present European War. It is conveniently divided into seven chapters, dealing respectively with materials, technic, sterile dressings, non-sterile dressings, packing, sterilization, storage and shipment. It is well illustrated with a number of text cuts and diagrams, and has a prefatory note by John W. Eliot, M.D., chairman of the Surgeons' Advisory Committee. This monograph is not only of immediate value in the continued work of the committee, but should form the basis of a subsequent work by the author on the preparation of surgical dressings, of which there is at present no English textbook in existence.



## THE BOSTON Medical and Surgical Journal

Established in 1822

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, MARCH 14, 1918.

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Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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### TRENCH FOOT.

THE present view of trench foot has broadened to such an extent that it has become somewhat difficult to gain an entirely clear idea of the relation between the various phenomena coming under this head. In early classifications, most writers were disposed to consider it as a form of frostbite. For example, Rathery and Bauzil in *Paris Médicale* of March 31, 1917, apparently regard it in this light, and treat the symptoms accordingly, although their method is new. But as more facts have been collected, and the conclusions are now published, considerable doubt has sprung up respecting many points in the etiology of the cases reported from the various fronts. One fact clearly emerges from the discussion—cold or frost alone is not the essential factor. To produce trench foot cold and wet must be combined, and it is becoming fairly certain that they are associated in most cases with constitutional elements.

In one of the most recent accounts (*Gazetta degli Ospedali*, October 21, 1917) Tassone

states that, in addition to frost and wet, the immobility of the limbs is the most important factor. Similarly, Borchard (*Zeitschrift für Chirurgie*, 1916, xliii, p. 142) notes that resting the legs is favorable to the occurrence of "frost-gangrene," implying that the inactive circulation is a causal influence. This explains why the feet are attacked first, and the shins next, the feet being farthest from the heart. On the other hand, Tassone points out that soldiers who keep up a vigorous circulation by marching and other muscular exertion usually have sound, healthy feet, and escape not only edema and gangrene, but also the milder forms of frostbite. The evil tendency is aggravated by the footgear of some armies. British surgeons frequently complain that the wearing of puttees and tight-fitting boots predisposes to trench foot by constricting the circulation. The puttee appears to be particularly objectionable, as it soaks up water which freezes on the legs. In spite of this obvious fault, puttees and leggings, which have the same defects, are still in use. It may be noted in this connection that the prevalence of trench foot has an important bearing, not only on the question of footgear, but also on army discipline in general. Among nations, the Germans and Bulgarians, with their heavy boots and woolen stockings, have suffered relatively little, whilst the Russians, owing to carelessness and shortage of leather, have been in the worst plight.

Since trench foot occurs in healthy, well-clad men, some authors have sought to connect it with constitutional causes. Thus Lieutenant Longridge (*The Lancet*, 1917, Vol. i, p. 62) observes that the blisters and sores are like the trophic sores of diseases of the nervous system, and he deduces a central origin. He adopts the thesis that trench foot is due to "leakage of neuro-electricity." This seems a rather fantastic effort to find a cause, but it may be readily admitted that nervous inhibition plays an important part. Some evidence in favor of this view is supplied by Ellis (*British Medical Journal*, 1917, Vol. i, p. 573). He noted the curative effects of nitroglycerine through dilatation of the peripheral vessels.

More recently, Raymond and Parisot have published a series of observations which tend to show that a mycelium is the cause of trench foot. They isolated an organism of this species from the water of the trenches (*Société médicale des hôpitaux de Paris*, October, 1917). The mode of

action is described briefly as follows: Soldiers stand for hours in water; their shoes and stockings become soaked, and the mycelium gradually penetrates the skin and tissues. Their method of treatment, which has the approval of the highest French authorities, consists in gentle cleaning of the skin with boiled water, in which soap is dissolved, and the application of compresses of sterile gauze soaked in a solution of powdered camphor and sodium borate. Care is taken not to break the skin or the blisters, but in cases of abrasion, a powder of camphor, sodium borate, betanaphthol, and eucalyptus is used. In most cases the infection is thoroughly eradicated by this treatment. It is applicable to the cases of frostbite, and owes much of its special merit to its rational character and avoidance of the older methods of rubbing with ice or snow, incision of the blisters, and immobility of the feet. It is better to use tepid water, gentle massage, and passive hyperemia.

The most valuable part of this study relates to treatment and problems of gangrenous change. Trench foot exists in at least four stages—the neuritic, producing pain; the edematous without discoloration; the edematous with blisters; and the gangrenous, partial or circumscribed, with redness. Captain A. D. Haydon describes, in addition, septic cases, with more or less constitutional disturbance, with fever, and still graver cases with cellulitis and purulent infection extending up from the dorsum of the foot (*tendo Achillis*) to the shin. Such cases are complex, in which it is difficult to disentangle the etiological elements. They must be treated by means of vaccines, antistreptococcic serum, injections of antiseptics into the veins. For the moist gangrene the best remedy is iodoform dissolved in ether, one part in ten. Spreading gangrenous cellulitis is noted in the worst cases,—a condition which he treats by free incisions, drainage, and sometimes amputation.

Trench foot accounts for so much preventable suffering and disability that we should be less than human if we did not point out two very obvious criticisms. Most of the surgeons abroad agree that waterproof shoes and warm woolen stockings, over which flannel is drawn in winter, are prophylactics. Some writers suggest rubbing the feet with grease. So far as we have observed, much attention is paid to the shape of the soldier's feet, to flat foot, and the style of the shoes, but the essential things are too often overlooked.

## VOCATIONAL REHABILITATION OF DISABLED SOLDIERS.

ON January 14, 1919, a most important conference met at Washington to fix on a program for the re-education of crippled soldiers of the American forces. Invitations to attend this conference were sent out by the Surgeon-General of the Army, at the request of the Secretary of War, to representatives of all government departments and private agencies which might be interested in the question. The attendance at this conference represented the following: Surgeon-General of the Army, Surgeon-General of the Navy, Surgeon-General of the Public Health and Marine Hospital Service, Bureau of War-Risk Insurance, Bureau of Education, Federal Board of Vocational Education, Department of Labor, Federal Compensation Commission, Council of National Defense, Department of Civilian Relief of the American Red Cross, Red Cross Institute for Crippled and Disabled Men, American Federation of Labor, Chamber of Commerce of the United States, National Association of Manufacturers.

The Surgeon-General of the Army presented a program which had been worked out by his office, providing for a comprehensive system of reconstruction, medical and economic, to be carried out under military auspices. The other conferees brought forth the argument that while medical and surgical repair were well within the scope of the surgeon-general's work, vocational training was a civilian matter, and should be cared for by civilians. It was also maintained that the after-care of the disabled soldier was already delegated by Congress, in some degree, to the Bureau of War-Risk Insurance, and that several other departments had very definite interests and responsibilities in the matter.

After much discussion, a committee was instructed to draw up a program to be followed. This committee met several times, and on January 21 appeared before the conference, bringing the draft of a bill for submission to Congress, calling for the creation of an inter-departmental commission to be known as the Board for Vocational Rehabilitation. After several amendments had been made, the bill was presented to the Surgeon-General of the Army, for transmission to the Secretary of War, and is now being introduced into Congress.

The measure as adopted by the conference provides for the vocational rehabilitation and return to civil employment of persons discharged from the military or naval service of the United States, who have been disabled in the line of duty when in such service, when the result is dismemberment, or injury to sight, or to hearing, or other disability, including disease. When mustered out of military service, such disabled persons shall, upon the order of the Bureau of War-Risk Insurance, follow the courses of vocational rehabilitation provided for by the Board of Vocational Rehabilitation, which is created under this measure.

The Bureau of War-Risk Insurance is empowered to order any disabled person who is unable to pursue his former occupation or some other gainful occupation, to follow the vocational rehabilitation courses. The same compensation as that given for total disability is to be allowed while the disabled person is pursuing these courses, and compensation may be withheld if the courses are not followed in a satisfactory manner.

The Board of Vocational Rehabilitation is to include one representative, respectively, of the Department of the Treasury, Department of War, Department of the Navy, Department of Labor, Federal Board for Vocational Education, and the members of the Board are to serve without compensation except for traveling and other necessary expenses.

The Board is authorized to establish three advisory committees,—one on agriculture, one on commerce and manufacture, and one on labor,—such committees to consist of persons who have special ability and experience with regard to the training and employment of men in agriculture, industry, and commerce.

The Board is to establish courses of vocational rehabilitation, which are to be given in connection with schools already established, or with industrial and commercial plants wherever possible. Provision is also made for the building of special schools where the need arises.

All medical and surgical work necessary to give functional and mental restoration to disabled persons in military service shall, until their discharge, be directly under the control of the War Department and the Surgeon-General; disabled persons in naval service shall, until their discharge, be cared for by the Navy Department and Bureau of Medicine and Surgery

of that Department. After discharge, functional and mental restoration are to be cared for by the War-Risk Insurance Bureau. Whenever pre-vocational work, mental or manual, is employed by the above agencies as a therapeutic measure, a plan shall be arranged between each of these agencies and the Board for Vocational Rehabilitation, in order to provide for a continuous process of pre-vocational and vocational training.

Ten million dollars are to be appropriated from the Treasury for the carrying on of the work.

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#### REDUCTION IN PAY OF OFFICERS IN THE FIELD.

A LAW which has been causing much discussion of late is that which takes from Army officers in the field who have dependents, the allowance for quarters which officers behind the lines receive. Though it might be supposed that a sound military policy would favor those nearest the fighting line, and so in greatest danger, and although in circulars now issued to candidates for commission in the Army the Government promises quarters or commutation, by a decision of the War Department, officers who are now serving in France, on the Mexican border, or in training camps have been deprived of this allowance. The commutation for quarters is paid when the officer is ordered on some detached service or city service in Washington or elsewhere. Never is there any consideration taken of the officer's family, as to quarters.

In times like these, it stands to reason that officers' families, as well as other people, are in need of the assistance which the allowance for quarters would give. Bills have twice been introduced into the Senate, which have attempted to restore the allowance, but have in both cases failed to pass on account of opposition from the War Department. The Quartermaster-General issued a statement to the effect that the annual expenditure for this purpose would amount to about thirty million dollars. The mere fact that the Quartermaster-General should issue such a statement, which practically means that the Government is depriving the families of Army officers of that amount, would seem almost enough to bring about the passage of a bill which has recently been introduced into

the House of Representatives, to secure for officers with dependents while on duty with troops, the commutation for quarters which they previously received.

There can be no doubt that the cutting off of such an allowance is a hardship to the officers and to their families. It is a well-known fact that many wives of officers are seeking employment to help support their families while their husbands are serving on the Mexican border or in France.

It is necessary for the effective development and maintenance of our fighting forces that they themselves shall be properly housed, and also that their families be kept in comparative comfort. The effect of the present War Department policy is to decrease the pay of every officer who is on duty with a tactical unit at camp or cantonment either at home or abroad, while the pay of officers not on duty with troops remains the same as in time of peace. To quote from the *Defense Bulletin*:

"No pacifist could contrive a more discouraging handicap to the successful prosecution of the war than to cut the pay of officers nearly 25% as soon as they start to fight or to teach others how to fight, and this at a time when their situation and that of their dependents makes them peculiarly susceptible to disastrous effects of the rapid and great increase in the cost of living."

#### MEDICAL NOTES.

**LOW DEATH RATES DESPITE THE SEVERE COLD.**—After two months of the most severe winter weather which this city has ever experienced, New York emerges with a health record which shows a saving of over 2600 lives over the death toll paid by the city during the corresponding months of 1917.

For the first two months of 1917 the death rate was 16.97 in 1917, as against 15.51 for the same period this year. If the death rate experienced in the first two months of last year had prevailed during the two months of this year, the number of deaths would have been 16,608. As a matter of fact, only 13,962 deaths occurred, which means a saving of 2,646 lives during the two months of 1918. When we consider the remarkable atmospheric condition prevailing during the two months past, and the fuel and food

difficulties which arose during that time, it is a cause for congratulation on the part of the people of the city that so favorable a showing can be made.

The most noteworthy reduction in the mortality was that from lobar pneumonia, there having been a decrease of 450 deaths reported from this cause, as compared with the corresponding period of 1917. Pulmonary tuberculosis, which showed for the first time in many years an increased mortality during 1917, gives promise of being lower for this year, as during the two months under discussion a perceptible decrease in the death rate from this cause has already occurred.

The saving of life has been mostly among adults, a fact which makes the saving to the community the more valuable. The number of births reported during the first two months of 1918 was 22,021, as compared to 24,227 during the same period of 1917, a decrease of 2206. There was also a falling off in the number of marriages, only 8389 having occurred in the first two months this year as compared to 11,187 during the same months last year.

**SMALLPOX IN NEW YORK STATE.**—Some time ago we commented on the prevalence of smallpox in various parts of Connecticut, and pointed out that unvaccinated communities, if invaded, would pay dearly for their failure to make use of the proven protective vaccination. According to a report just issued by the New York State Department of Health, a number of local outbreaks of smallpox occurred during the past year in various parts of New York State, in several instances the disease entering New York from Connecticut. In other instances the primary case came from Massachusetts, Canada, Ohio and from Pennsylvania.

Early in last November the disease made its appearance in central New York, the first case being discovered at Rome. From there it spread to Utica, where 47 cases resulted in the next two months, and to Frankfort in Herkimer County, 78 of them in the town and village of Frankfort.

Within the past few months over 250 cases of smallpox have occurred in various parts of the state, several of them within the city of New York. Moreover, as may be seen from the U. S. Health Reports, smallpox is prevalent not in New York State alone. Hence, in spite of vigilance, those who travel or who mingle with oth-

ers may at any time come into close contact with persons capable of transmitting the disease. According to the State Health Department, a salesman was recently encountered who, while he was suffering from smallpox, had travelled over several counties before his condition was discovered.

**GOVERNMENT TO SUPERVISE MEDICAL SCHOOLS.**—A special division of the Surgeon-General's office has been created under the charge of Major H. D. Arnold, M.R.C., which is to oversee the work of students enlisted in the Medical Reserve Corps under the section of the selective service act, which provides that students in "well-recognized" medical, dental, or veterinary schools may, with the permission of the Surgeon-General, be enlisted in the Medical Reserve Corps, which is not liable to active call to service until full professional knowledge is acquired.

The appointment of Professor Waite of Western Reserve to this board is a significant one, for he is a recognized authority on medical education. Not only does this appointment show that the nation is planning to see to it that the doctors who go into the Army are qualified to fill their positions, but it means that some medical schools will no longer be able to conceal their shortcomings. Should this board to which Dr. Waite has been appointed find that any student in the Medical Reserve Corps is not making satisfactory progress with his professional studies, he may be removed from the reserve list, and be made subject to call to active military service.

The direct result of such an investigation should help to standardize medical education, and make public the standing of medical schools.

**PRINCIPAL CAUSES OF DEATH.**—The Census Bureau has issued a statement with reference to mortality in 1916, showing that the "registration area," which contains approximately 70% of the population of the United States, reported for that year 1,001,921 deaths. Nearly one-third of these deaths were due to three causes,—heart diseases, tuberculosis, and pneumonia,—and nearly another third were due to the following nine causes: Bright's disease and nephritis, cancer, apoplexy, diarrhea and enteritis, influenza, arterial diseases, diabetes, diphtheria, and typhoid fever. Cancer and other malignant tumors caused 58,600 deaths in 1916, in the registration area. Of these, 22,480 resulted from

cancers of the stomach and liver. The death rate from cancer has risen from 63 per 100,000 in 1900, to 81.8 in 1916. For the whole United States, the cancer mortality is not less than 80,000 per annum. The increase in cancer mortality has been almost constant, though part of this increase may be due to more correct diagnoses and greater care on the part of the physicians in reporting to the registration officials.

It is shown by the census announcement that the decline in the tuberculosis death rate has been most pronounced, due to the progress which has been made in its prevention and treatment. Those interested in the control of cancer may feel that educational activities along that line may be as successful in its control as they have been in the control of tuberculosis. There has been a steady increase in the number of patients seen in time for successful treatment of cancer, and a marked increase in the number of those seeking advice about pre-cancerous conditions.

**SECTIONAL CONFERENCE PLANS.**—Preliminary arrangements are now being made for six sectional conferences on tuberculosis next fall. The time and place of each will soon be announced. At five conferences last year, Continuation Committees were elected to act in an advisory capacity regarding plans for the 1918 meetings. These committees are now giving consideration to the matter of time and place, as well as suggestions for programs. Members of the Continuation Committee from New England are as follows: Dr. E. D. Merrill, Foxcroft, Me.; Dr. George Haven Clarke, Concord, N. H.; Dr. Edward J. Rogers, Pittsford, Vt.; Hon. Jonathan Godfrey, New Haven, Conn.; Miss Mary Murray, Providence, R. I.; and Dr. Arthur K. Stone, Boston.

**SPANISH NATIONAL MEDICAL CONGRESS.**—It is announced that the first session of the Spanish National Medical Congress will be held at Madrid from April 21 to 26, 1918, in seventeen sections, under the presidency of Dr. Ramon Y Cajal. Dr. Cajal, known for his work on the histology of the nervous system, was born in 1852, the son of a physician and professor of anatomy. After graduating from the University of Saragossa in 1873, he served for a time as an army medical officer in Cuba. He was appointed professor of anatomy at Valencia in 1881, professor of histology in Barcelona in 1886, and at Madrid in 1892.

## WAR NOTES.

**PUBLIC HEALTH ADMINISTRATION IN RUSSIA.**—Russia, with a population of 180,000,000, by far the greater part of which lives in rural districts, has developed a remarkable system of free medical care and health protection for her rural inhabitants. Up to 1864, the practice of medicine was confined chiefly to the cities. After the creation of the zemstvos by Alexander II, an effort was made to give free medical care to rural inhabitants, and by 1870 the zemstvos had arranged a system of fixed medical districts, each provided with a small hospital and a qualified physician. The number of hospitals has since then constantly increased. The tendency has been to make all hospital and dispensary work free, as the care of the sick is thought to be a natural duty rather than an act of charity. The province of Moscow has the most fully developed system, providing a hospital for every 10,000 to 15,000 inhabitants, each with two physicians, two medical assistants, and four sister nurses. Each of the larger hospitals provides a certain number of beds for general use, for communicable diseases, and maternity cases; each has its dispensary, and no charge is made for medicine or for medical care; home visits are made only in serious cases. On the preventive side, the province of Moscow is divided into thirteen sanitary districts, with medical supervisors, a central statistical division, a laboratory and a vaccine institute. There is a sanitary council for each district, and also for the whole province, with district physicians and factory physicians, all of whom are under the control of the zemstvos.

## BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending March 2, 1918, the number of deaths reported was 345, against 299 last year, with a rate of 22.94, against 20.19 last year. There were 58 deaths under one year of age, against 56 last year.

The number of cases of principal reportable diseases was: diphtheria, 96; scarlet fever, 36; measles, 190; whooping cough, 56; typhoid fever, 1; tuberculosis, 66.

Included in the above were the following cases of non-residents: diphtheria, 14; scarlet fever, 8; measles, 3; tuberculosis, 7.

Total deaths from these diseases were: diphtheria, 5; scarlet fever, 1; measles, 2; whooping cough, 2; typhoid fever, 1; tuberculosis, 35.

Included in the above were the following non-residents: diphtheria, 2; scarlet fever, 1; typhoid fever, 1; tuberculosis, 3.

**CUTTER LECTURES ON PREVENTIVE MEDICINE.**—The Cutter Lectures on Preventive Medicine and Hygiene for 1918 will be given by Professor E. V. McCollum, of the School of Hygiene and Public Health, Johns Hopkins University. The dates and subjects are as follows:

March 19—The Essentials of an Adequate Diet.

March 20—The Special Dietary Properties of Our Natural Foodstuffs.

March 21—The Dietary Habits of Man and Their Relation to Disease.

The lectures will be given in the Amphitheatre of Building E, Harvard Medical School, from 5 to 6 p.m.

### The Massachusetts Medical Society.

#### MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION.

**LIST OF MASSACHUSETTS PHYSICIANS IN THE SERVICE OF THE ARMY, NAVY AND RED CROSS, COMPILED BY THE MASSACHUSETTS STATE COMMITTEE, COUNCIL OF NATIONAL DEFENSE, MEDICAL SECTION, AS OF FEBRUARY 1, 1918.**

THIS list contains only names of men whose official acceptance of their commissions had been received previous to February 1, 1918. Names in small type are of Medical Reserve Corps, United States Army. Those in capitals and small capitals are designated as follows:

"Medical Corps" ... Medical Corps, Regular Army  
"National Guard" ... Medical Corps, National Guard  
"Navy" ... Medical Corps, Navy  
"Naval Reserve" ... Medical Corps, Naval Reserve  
"Red Cross" ... Red Cross Service, Europe

\*Honorably discharged † Killed in action

Any corrections will be gratefully received by the Secretary of the Committee, Dr. Walter L. Burrage, 282 Newbury Street, Boston.

Abbot, Edward S. ....	Waverley
Adams, Donald S. ....	Boston
Adams, Edward A. ....	Ntn. Lr. Falls
ADAMS, WINTHROP, Naval Reserve ...	Cambridge
Adams, Zabdiel B. ....	Boston
Almone, Victor A. ....	Winchester
Alexander, Harry L. ....	Boston
Alexander, Kirke L. ....	Orange
Allen, Arthur W. ....	Boston
Allison, Carl E. ....	Somerville
Amiral, Hiram H. ....	Boston
*Anderson, John H. ....	Brockton
ANGELL, WORCESTER R., Naval Reserve	Brookline
APPLEBAUM, JACOB, Naval Reserve ...	Boston
Arnold, Horace D. ....	Boston

ASH, JAMES E., Medical Corps .....	Boston	Butler, Charles S. ....	Boston
Ash, Richard M. ....	West Quincy	Byrne, William R. ....	Framingham
Ashmore, Buell L. ....	Palmer	Byrnes, Harry F. ....	Springfield
Aub, Joseph C. ....	Boston		
Austin, Arthur E. ....	Boston	Cabot, Richard C. ....	Boston
Babcock, Harold L. ....	Boston	Cady, Frederick B. M. ....	Cambridge
Bagnall, Elmer S. ....	Groveland	Cahill, Harry P. ....	Boston
Bailey, Charles H. ....	Gardner	Caines, Richard J. R. ....	Boston
BAILEY, KARL R., National Guard ...	Boston	Caldicott, Francis S. ....	Taunton
BAILEY, WALTER C., Red Cross .....	Boston	CAMPBELL, FRANKLIN E., ....	
Baker, Horace M. ....	Boston	Naval Reserve .....	Medford
Banquer, Jacob E. ....	Boston	Canedy, Charles F. ....	Greenfield
Barnes, Frederick R. ....	Fall River	Cannon, Walter B. ....	Boston
Barnes, Louis D. ....	Lanesborough	Carden, Charles J. ....	Haverhill
BARROW, WM. H., Medical Corps .....		Carley, Arthur W. ....	Ayer
Bartol, Edward F. W. ....	Milton	Carney, Harold E. ....	Boston Harbor
Bartol, John W. ....	Boston	Caro, Herman ....	Palmer
Batchelder, Hollis G. ....	Dedham	Carpenter, Robert J. ....	North Adams
BAXTER, CLARENCE P., Medical Corps ..	Topsfield	Carr, Arthur W. ....	Bridgewater
Baxter, William E. ....	Topsfield	Chadwell, Orville R. ....	Boston
Beal, Howard W. ....	Worcester	Chagnon, Deodatus T. ....	Holyoke
Rearse, Carl ....	Boston	Chambers, Ralph M. ....	Westboro
Beaudet, Elphege A. ....	Lowell	Chandler, Clarence L. ....	Fitchburg
Beaupre, Dolor I. ....	Holyoke	Chandler, Harold B. ....	Boston
Beckley, Chester C. ....	Lancaster	Chandler, Thomas E. ....	Boston
BEDARD, J. ARMAND, Red Cross .....	Lynn	Chapin, William A. R. ....	Springfield
Beebe, Theodore C. ....	Boston	Chaput, Lucien R. ....	Haverhill
Begg, Alexander S. ....	Boston	Chase, Frank H. ....	Chelsea
Behrman, Roland A. ....	Roslindale	Chase, Heman B. ....	Hyannis
Belding, David L. ....	Boston	CHEEVER, AUSTIN W., Naval Reserve ..	Mattapan
Bell, Richard D. ....	Somerville	Chereskin, Johnston L. ....	Springfield
Benoit, Samuel J. ....	Gardner	CHISHOLM, LAWRENCE C., ....	
Berry, Gordon ....	Worcester	Naval Reserve .....	Salem
*Berry, Walter D. ....	Braintree	Chisholm, Miles D. ....	Westfield
Bigelow, Edward B. ....	Worcester	Choquette, Hormidas .....	New Bedford
Bigelow, George H. ....	Boston	Chronquest, Alfred P. ....	Danvers
Bill, Jose P. ....	Boston	Claffy, John McM. ....	Springfield
Binney, Horace ....	Boston	Clark, DeWitt S. ....	Salem
Biondi, George C. ....	Framingham	Clark, Harry A. ....	Andover
Birdsall, Clarence H. ....	Boston	CLARK, W. IRVING, Red Cross .....	Worcester
Birnie, John M. ....	Springfield	Clarke, Willis E. ....	Malden
Bishop, Franklin L. ....	Boston	CLIFFORD, RANDALL, Naval Reserve ..	New Bedford
BLANCHARD, WM. H., National Guard ..	Allston	Clute, Howard M. ....	Boston
Blanchette, William H. ....	Fall River	Clymer, George ....	Boston
Boardman, William P. ....	Boston	COATES, EDWARD A., JR., Medical Corps ..	Chelsea
Rock, Arlie V. ....	Boston	COBB, GARDNER N., Naval Reserve ....	Boston
BOGAN, FREDERICK L., National Guard ..	Boston	Coburn, Harry R. ....	Tewksbury
Bolduc, Alfred G. ....	Attleboro	Cochrane, Robert C. ....	Boston
Bonneville, A. J. ....	Hatfield	Coffin, Whitman K. ....	Provincetown
Boothby, Walter M. ....	Boston	Cogswell, George P. ....	Cambridge
Bostick, Warren J. ....	W. Springfield	Cogswell, William ....	Haverhill
Bottomley, John T. ....	Boston	Cohen, Nathaniel M. ....	Boston
Bowen, James F. ....	Amherst	Cohen, Samuel A. ....	Roxbury
Brackett, Elliot G. ....	Boston	Collins, Joseph D. ....	Northampton
Breed, Nathaniel P. ....	Lynn	Collins, William J. ....	Northampton
Bressler, Charles W. ....	Boston	Colwell, Howard S. ....	Worcester
Bridgwood, David ....	Warren	COLWILL, ALBERT W., National Guard ..	
Briggs, Lloyd V. ....	Boston	Conner, Homer L. ....	Haverhill
BRIGGS, MAURICE T., Naval Reserve ..	Boston	Connery, William L. ....	Springfield
BROWN, CHESTER P., National Guard ..		CONNOR, HAROLD J., National Guard ..	
Brown, Percy ....	Boston	CONNOR, WILLIAM H., Navy .....	Pittsfield
BROWN, ROY F., National Guard ....	Fall River	Cook, James H. ....	Quincy
Browne, William E. ....	Boston	Cook, Robert J. ....	Boston
BRUCKSHAW, HENRY A., Naval Reserve ..	Fairhaven	Cort, Parker M. ....	Springfield
Brunelle, Arthur L. ....	New Bedford	Cosgrove, Joseph J. ....	Westfield
Bryant, John ....	Boston	Cotting, William F. ....	Boston
BRYANT, MASON D., National Guard ..	Lowell	COTTLE, GEORGE F., Navy .....	Edgartown
Buckley, James T. ....	Marlboro	Councilman, William T. ....	Boston
Budreski, Alphonse F. ....	Brighton	COUPAL, JAMES F., National Guard ..	Boston
Bull, Edward C. ....	Boston	COURTNEY, THOMAS J., Naval Reserve ..	Waltham
BUNKER, HENRY A., JR., ....		COWLES, DWIGHT J., Naval Reserve ..	Ipswich
National Guard .....	Boston	Cox, Oscar F., Jr. ....	Boston
Bunker, Sidney M. ....	Worcester	Craigin, George A. ....	Boston
Burke, Francis R. ....	Quincy	Crandall, Walter M. ....	Lawrence
Burke, George H. ....	Springfield	CRANDON, LEROI G., Naval Reserve ..	Boston
Burnham, J. Forrest ....	Lawrence	CREMENS, JOHN F., Naval Reserve ..	Cambridge
Burns, John E. ....	Natick	Crimmin, Leo P. ....	Boston
Burpee, Benjamin P. ....	Boston	Crosbie, Arthur H. ....	Boston
Burrell, Harry C. ....	Medford	CROCKETT, EUGENE A., Red Cross ....	Boston
BURT, CLARENCE E., Medical Corps ....	New Bedford	CULLEN, CHARLES A., Naval Reserve ..	Hyde Park
		Cunha, Manuel F. ....	Boston



Cunningham, Richard A. ....	Boston
CURLEY, CLARENCE P., Naval Reserve ..	Provincetown
CURRAN, ARTHUR M., National Guard ..	North Adams
Curtin, John F. ....	Lawrence
Cushing, Harvey ....	Brookline
Cutler, Elliott C. ....	Boston
Cutter, Irving T. ....	Winchester
Dacey, Cornelius J. ....	Brockton
Dalrymple, Alfred T. ....	South Boston
Dana, Harold W. ....	Brookline
Danforth, Murray S. ....	Boston
Darling, Eugene A. ....	Cambridge
Davis, Charles H. ....	Hamilton
Davis, Ernest L. ....	Springfield
Davis, Frank A. ....	Boston
DAVIS, HENRY L., National Guard ....	
Davis, Henry L. ....	Chelsea
*Davis, Henry L. ....	Lynn
Davis, Lincoln ....	Boston
Dennen, Ralph W. ....	Waltham
Denning, William E. ....	Worcester
Denny, George P. ....	Boston
Derby, George S. ....	Boston
DeWolf, Charles W. ....	Tewksbury
Diehl, Harold E. ....	Quincy
Dillenback, Emil U. ....	Springfield
Dillon, William J. ....	Springfield
DiMento, Vincent J. ....	Brighton
Dobson, Clarence H. ....	Conway
Dobson, William M. ....	Dor. Center
Dodd, Isaac S. F. ....	Pittsfield
Dole, Kenneth L. ....	Boston
Dolloff, Eugene M. ....	East Lynn
Dow, DAVID C., Naval Reserve ....	Cambridge
Dowling, John J. ....	Boston
DOWNING, JOHN G., Naval Reserve ..	Boston
Doyle, John H. ....	Fall River
Drury, Dana W. ....	Boston
DUDLEY, AUGUSTUS W., Naval Reserve ..	Cambridge
Dudley, Charles ....	Kingston
DUDLEY, OSCAR A., National Guard ..	Saxonville
DUFF, JOHN, JR., Navy ....	Boston
Duffy, Edward A. ....	Boston
DUNN, JOSEPH H., National Guard ..	
Dwinell, George F. ....	Boston
Dwyer, WM. J., National Guard ....	Cambridge
EASTMAN, GEORGE W., Naval Reserve ..	Lynn
Eaton, Harold B. ....	Boston
EATON, WILLIAM E., Navy ....	Boston
ELDRIDGE, DAVID C., Naval Reserve ..	Dorchester
Elliot, Henry W. ....	Belchertown
Ellsworth, Samuel W. ....	Boston
ELY, THEODORE W., National Guard ..	Boston
Emerson, Kendall ....	Worcester
Emmons, Arthur B., 2nd ....	Boston
Emmons, Henry M. ....	Jamaica Plain
ERLENBACH, JAMES H., National Guard ..	Dorchester
Ernst, Harold C. ....	Boston
Eustis, Richard S. ....	Boston
Evans, Robert J., Jr. ....	Springfield
Ewing, Edward H. ....	Stoughton
Favour, Richmond, Jr. ....	Natick
Faxon, Nathaniel W. ....	Stoughton
FAY, WILLIAM J., National Guard ....	Worcester
Fellows, Albert W. ....	Boston
Fennelly, Daniel J. ....	Fall River
Fenton, Alfred A. ....	Norwood
Flege, Herbert R. ....	Waverley
Feld, Henry M. ....	Norwood
FILDEN, JOHN S. O., JR., ....	
Medical Corps ....	Fall River
Finnerty, Charles W. ....	Somerville
Fiske, Eben W. ....	Boston
FITTS, HENRY B., Navy ....	Provincetown
Fitts, John B. ....	Boston
Fitz, Reginald ....	Boston
Fletcher, Robert S. ....	Oxford
FOLEY, JOSEPH D., Medical Corps ....	Springfield
FORBES, ALEXANDER, Naval Reserve ..	Milton
Forbes, Henry ....	Boston
Ford, John F. ....	Boston
FORNELL, CARL H., Naval Reserve ....	Quincy
Foster, John H. ....	Boston
Fraim, Irving W. ....	Waltham
Fraser, Archibald McK. ....	Boston
Fraser, Somers ....	Boston
Fregeau, Aime N. ....	Fitchburg
French, Edward H. ....	Brighton
Frothingham, Channing, Jr. ....	Boston
Gage, Homer ....	Worcester
Gallagher, John H. C. ....	Chicopee
Gallagher, Nicholas A. ....	Malden
Ganley, A. J. ....	Methuen
GARDNER, HOWARD E., Navy ....	Springfield
*Gardner, Leroy U. ....	Cambridge
Gay, William M. ....	Sharon
Gelineau, Joseph H. ....	Easthampton
Gennert, Jacob ....	New Bedford
George, Ariel W. ....	Boston
George, Frank W. ....	Worcester
Gettings, James H. ....	Boston
Ghoreyeb, Albert A. W. ....	Boston
Gilfillan, Donald ....	Worcester
GILLON, CHARLES G. C., Naval Reserve ..	Taunton
GLASS, JAMES, National Guard ....	Frammingham
Gleason, Benjamin W. ....	Athol
Goethals, Thomas R. ....	Boston
GOLDEN, ROSS, Medical Corps ....	Boston
Goldthwait, Joel E. ....	Boston
Goodall, Harry W. ....	Boston
Goodwin, James J. ....	Clinton
Gosline, Harold I. ....	Boston
Gould, Clarke S. ....	Norwood
Gould, James A. ....	Westboro
Goulding, Timothy F. ....	Boston
GRABFIELD, GUSTAVE P., ....	
National Guard ....	Boston
Graham, James M. ....	Ft. Revere
GRAHAM, OTIS L., Medical Corps ....	Boston
Grandison, Louis J. ....	Charlestown
Greaney, William F. ....	Holyoke
Green, Hyman ....	Boston
Green, Milo C. ....	Boston
Greene, Richard C. ....	Northampton
GREENOUGH, ROBERT B., ....	Boston
Naval Reserve ....	
Greenwood, Allen ....	Boston
GUNTER, FRED C., National Guard ....	Boston
GUTHRIE, ANDREW D., Naval Reserve ..	Medford
Gwynne, Samuel C. ....	Worcester
HAIGH, GILBERT, Naval Reserve ....	Worcester
Hale, Frank S. ....	Brookline
Haller, David A. ....	Boston
Hamilton, Burton E. ....	Roxbury
Hamlin, William E. ....	Waltham
HAMMOND, JOHN W., JR., ....	
Naval Reserve ....	Cambridge
HANDY, HARRY T., Red Cross ....	Scituate Ctr.
HANLON, MORGAN P., Naval Reserve ..	Cambridge
Hannon, Daniel F. ....	Pittsfield
Hanscom, Ridgely F. ....	Newton
Hapgood, Lyman S. ....	Cambridge
HARDWICK, SYDNEY, National Guard ..	Quincy
Harkins, William J. ....	Quincy
Harmer, Torr W. ....	Boston
Harriman, David E. ....	Springfield
Harris, Carl T. ....	Boston
Harris, Charles E. ....	Hyannis
HART, JOSEPH S., National Guard ....	Lincoln
Hartmann, Gustave ....	Lynn
Harvey, Samuel C. ....	Boston
Haskins, Abraham ....	Boston
HASSETT, LEONARD W., National Guard ..	Lynn
Hassman, David M. ....	Boston
Hatch, Ralph A. ....	Boston

Haywood, Ralph W. ....	Salem	LADD, MAYNARD, Red Cross .....	Boston
HEFFERNAN, DAVID A., Naval Reserve ..	Cambridge	LaFortune, Wilfrid T. ....	Fitchburg
Henderson, George D., Jr. ....	Holyoke	Lally, William J. ....	Pittsfield
Hiltbold, Werner .....	Easthampton	Lambert, John H. ....	Lowell
Hodgdon, Frank W., Jr. ....	Boston	Lancaster, Walter B. ....	Boston
Hodskins, Edward B. ....	Greenfield	Lane, Clarence G. ....	Woburn
Hodskins, Morgan B. ....	Palmer	Lane, John W. ....	Boston
Hollings, Charles Byam .....	Boston	Lane, Walter A. ....	Milton
Hooker, Sanford B. ....	Boston	LANOIS, ESDRAS J., Naval Reserve ..	Northboro
HOPKINS, LAWRENCE P., Naval Reserve ..	Somerville	Lanpher, Howard A. ....	Chester
Hopkins, Ralph H. ....	Boston	LaRiviere, Evariste .....	New Bedford
HORNOR, ALBERT A., National Guard ..	Boston	Latham, Benoni M. ....	Mansfield
Horraz, Gilbert .....	Boston	LAWRENCE, HOWARD F., Navy .....	Falmouth
Horrigan, Arthur J. ....	Holyoke	Leavitt, Frank C. ....	Belmont
Houston, David W., Jr. ....	Boston	Leavitt, Peirce H. ....	Brockton
Howard, Frederick H. ....	Williamstown	Leadbury, John W. ....	Uxbridge
†Howe, George P. ....	Boston	Lee, Roger Irving .....	Cambridge
*Howe, Walter O. ....	Boston	Lee, Wesley T. ....	Boston
Hudson, Carl B. ....	Boston	Leith, Richard B. ....	Cambridge
Hughes, Edgar H. ....	Northampton	Leland, George A., Jr. ....	Boston
Hunt, Robert B. ....	Boston	Leland, Harold L. ....	Lowell
Hussey, Earle E. ....	Fall River	Lemaire, Willard W. ....	Worcester
Hyman, Clarence H. ....	Boston	Lemaire, William F. ....	Lynn
Isley, Frederick R. ....	Medford	Lemay, Alfred M. ....	Brockton
Irving, Frederick C. ....	Boston	LENA, HUGH F., Naval Reserve .....	Boston
IRWIN, GRATTON G., Navy .....	Greenfield	LENTINE, GASPARE E., National Guard ..	
Jackson, Arthur M. ....	Boston	Leverton, Reuben L. ....	Boston
Jackson, John P. ....	Fall River	Lewis, Elisha S. ....	Princeton
Jackson, Sumner W. ....	Boston	Lewis, Frank E. ....	Nantucket
Janes, Arthur P. ....	Boston	Light, Emmett E. ....	Springfield
Janes, B. Franklin .....	Northampton	Limauro, Louis H. ....	Lynn
Janney, James C. ....	Boston	Lincoln, George C. ....	Worcester
JENKINS, THOMAS L., National Guard ..	Topsfield	Lincoln, Merrick .....	Worcester
Jennings, John G. ....	Amherstdale	Lindsey, John H. ....	Fall River
Jensen, William C. ....	Worcester	Little, George T. ....	Uxbridge
Jessaman, Leon W. ....	Frammingham	Littlewood, Thomas .....	Pittsfield
Jillson, Walter A. ....	Westboro	Livingston, Clarence B. ....	Lowell
Johnson, Alfred E., Jr. ....	Greenfield	Long, Rufus W. ....	Boston
Johnson, Erik St. J. ....	New Bedford	LORD, FREDERICK T., Red Cross .....	Boston
JOHNSON, HERBERT L., National Guard ..	Roxbury	Lovesey, Burton E. ....	Lowell
Johnson, Leighton F. ....	Norwood	Lovett, Robert W. ....	Boston
JOHNSON, LEWIS W., Navy .....	Greenfield	Lowe, Thomas S. ....	Fort Rodman
Johnson, Peer P. ....	Beverly	Lowney, Dennis J. ....	New Bedford
JOHNSTON, CLYDE C., National Guard ..	Springfield	Lund, Fred B. ....	Boston
JONES, FREDERICK E., National Guard ..	Quincy	Lurier, Israel .....	Worcester
JONES, GLENN I., Medical Corps .....	Ayer	Lyman, Henry .....	Boston
Jones, Robert L. ....	Lowell	Lynch, Charles F. ....	Springfield
Jones, Thomas P. ....	Roxbury	LYON, JAMES A., National Guard .....	
Judkins, Louville M. ....	Boston	MacAusland, Andrew R. ....	Boston
Kane, William V. ....	Lynn	MACDONALD, FRED L., Red Cross .....	Waltham
Kaufmann, Samuel B. ....	Fall River	MacIver, George A. ....	Boston
Keane, Henry J. ....	Everett	MacKnight, Richard P. ....	Fall River
Kearney, John H. ....	Fitchburg	MacKnight, William F. ....	Fall River
KEEGAN, JOHN J., Naval Reserve ..	Boston	MacNaughton, Wallace F. ....	Boston
KEENAN, GEORGE F., National Guard ..	Brighton	Macomber, Donald .....	West Newton
Keenan, James A. ....	Boston	MacPherson, John D. ....	Boston
KELLEHER, SIMON B., National Guard ..		*Mahoney, Daniel F. ....	Boston
KELLEY, ROBERT E. S., Navy .....	Mattapan	Mahoney, John F. ....	New Bedford
Kelly, John J. ....	Marlboro	Mahoney, John L. ....	Boston
Kemmerer, Theodore W. ....	Boston	*Mahony, Francis R. ....	Lowell
KENNEDY, THOMAS J., Navy .....	So. Hadley	MAINS, CHARLES F., National Guard ..	Milton
*Keppler, Charles O. ....	Boston	Maloney, John M. ....	Springfield
Kerr, William J. ....	Boston	MALONSON, JAMES H., National Guard ..	
Kewer, Leo T. ....	Waverley	Mann, Henry L. ....	Boston
Kilroy, Philip .....	Springfield	*Mannix, Louis E. ....	Chicopee Falls
King, Edward .....	Boston	Marble, Henry C. ....	Boston
KING, FREDERICK A., National Guard ..	Boston	Marlow, Searle B. ....	Boston
Kinnicutt, Roger .....	Worcester	MARTIN, HARRY C., National Guard ..	Springfield
Kinsley, William G. ....	Boston	Martin, John F. ....	Boston
KIRKPATRICK, GEORGE H., .....		Marvin, Frank W. ....	Boston
National Guard .....	Lynn	Mason, Nathaniel R. ....	Boston
Kirkwood, Allan S. ....	Newton Ctr.	MATHES, ROY W., Naval Reserve .....	Lynn
Kissock, Robert J. ....	Boston	Mathewson, Frank W. ....	New Bedford
Knowles, Edward A. ....	Revere	*May, James V. ....	North Grafton
Knowles, William F. ....	Boston	McCaffrey, Jerome J. ....	Attleboro
Koefod, Hilmar O. ....	Boston	McCann, William S. ....	Boston
Kreutzmann, Henry A. R. ....	Boston	MCCARTHY, EUGENE J. ....	
		National Guard .....	Malden
		McCarthy, Louis F. ....	Malden

McCormick, John J. ....	Woburn	Oliver, Everard L. ....	Boston
McCormick, William A. ....	New Bedford	O'Neill, Richard F. ....	Boston
McCrudden, Francis H. ....	Boston	Osgood, George ....	Cohasset
McDonald, William J. ....	Brookline	Osgood, Howard ....	Boston
McFadden, James F. ....	Foxboro	Osgood, Robert B. ....	Boston
McGillicuddy, Cornelius J. ....	Boston	Otis, Walter J. ....	Waverley
McGraw, Andrew J. ....	Taunton	Overholser, Winfred ....	Westboro
McGuire, Joseph H. ....	Boston	OWEN, ALBERT S., National Guard ....	Framingham
McKENNA, PETER G., National Guard ....	Boston	Packard, George B., Jr. ....	Boston
McLaughlin, Arthur O. ....	Haverhill	Palfrey, Francis W. ....	Boston
McLaughlin, English N. ....	Newton	Palmer, Walter W. ....	Boston
McLean, John A. ....	W. Somerville	Papen, George W. ....	East Boston
McMahon, William T. ....	Pittsfield	Parcher, George C. ....	Saugus
McPherson, William E. ....	Canton	*Parker, Frederic, Jr. ....	Boston
McQuestion, Philip ....	Boston	PARKER, HAROLD F., National Guard ....	Boston
Means, James H. ....	Boston	Parker, Raymond B. ....	Winthrop
Medalia, Leon S. ....	Boston	Parker, Willard S. ....	Boston
Medlar, Edgar M. ....	Boston	Parkhurst, Guy McM. ....	Cambridge
Meehan, Patrick J. ....	Lowell	Parlow, George G. ....	Fall River
Merrill, Adelbert S. ....	Boston	Parris, Roland O. ....	Brookline
Merrill, Charles H. ....	Lynn	Partington, Cyrus B. ....	Fall River
Merrill Clyde H. ....	Marlboro	Pascoe, James B. ....	Ft. Revere
Merrill, Everett A. ....	East Lynn	Peabody, Charles W. ....	Boston
Merrill, William H. ....	Lawrence	Peabody, Francis W. ....	Boston
MERRITT, EDWARD L., Naval Reserve ....	Fall River	Pease, Charles W. ....	Needham
Merritt, Victor S. ....	Springfield	Penhallow, Dunlap Pearce ....	Boston
MESSER, EDWARD R., Naval Reserve ....	Pittsfield	PERCY, KARLTON G., Red Cross ....	Brookline
Metcalf, Ben Hicks ....	Winthrop	Perkins, Hamilton C. ....	Boston
Miller, Percy F. ....	Harwich	Perkins, Roy S. ....	Lowell
MILLER, RICHARD H., National Guard ....	Boston	Perry, Arthur P. ....	Boston
MILLET, JOHN A. P., Medical Corps ..	Boston	Perry, Charles E. ....	Northampton
Millett, Frank A. ....	Greenfield	Perry, Herbert B. ....	Northampton
Milot, Wilfred F. ....	Attleboro	Perry, Walter L. ....	Worcester
Mitchell, Frank W. A. ....	Lynn	Peters, John D. ....	Gt. Barrington
Mixter, Charles G. ....	Boston	Pettengill, Warren M. ....	Boston
Mixter, Samuel J. ....	Boston	Petty, John A. ....	Brockton
Mixter, William J. ....	Boston	Pfeiffer, Albert ....	Lexington
Moline, Charles ....	Sunderland	Phelan, Edward F. ....	N. Brookfield
Moncrieff, William A. ....	New Bedford	Phillips, John C. ....	Wenham
MONTGOMERY, JAMES B., Medical Corps ..	Boston	*Phipps, Cadis ....	Boston
Moore, Howard ....	Boston	Pierce, Appleton H. ....	Leominster
Mooring, Scott W. ....	Gloucester	PIERCE, REUEL A., National Guard ....	Canton
MORAN, CHARLES L., Navy ....	Roxbury	Pike, F. May ....	Melrose
Moriarty, Patrick M. ....	Springfield	Piper, Frank ....	Boston
Morris, Samuel L., Jr. ....	Boston	Plouffe, Bernard L. ....	Webster
Morrison, William R. ....	Boston	Plummer, Frederic H. ....	Chelsea
Morriss, William S. ....	Fall River	Porter, Charles T. ....	Boston
Morse, Frank L. ....	Somerville	Powers, Harris E. ....	Boston
Morton, John J., Jr. ....	Boston	Pratt, Joseph H. ....	Boston
Mosher, Harris P. ....	Boston	Priest, Herbert B. ....	Ayer
Mossman, George ....	Westminster	Provost, Raoul G. ....	New Bedford
Moulton, Starr A. ....	Winthrop	Pulsifer, Nathan ....	Lowell
Munro, Donald ....	Milton	Quackenboss, Alexander ....	Boston
Murphy, James M. ....	Palmer	Quinn, James H. ....	Springfield
Murphy, John J. ....	Cambridge	RAPPORT, DAVID L., National Guard ..	
Murphy, Joseph L. ....	Taunton	Rathey, Arthur A. ....	Lawrence
Neal, Kemp P. ....	Boston	Reed, Carlisle ....	Boston
*NEVERS, HARRY H., National Guard ..	Lawrence	Reese, John A. ....	Boston
Newton, Roland S. ....	Westboro	Reid, William D. ....	Newton
Newman, Leon ....	Jamaica Plain	Rice, George A. ....	
Nichols, Andrew ....	Danvers	*Riggs, A. Fox ....	Stockbridge
Nichols, Edward H. ....	Boston	*Riley, Augustus ....	Boston
Nichols, Nelson E. ....	Boston	Ripley, Harold W. ....	Boston
NIELSEN, EDWIN B., National Guard ....	Boston	RISLEY, JOHN N., Naval Reserve ....	New Bedford
Norbury, Frank G. ....	Boston	Roberts, Wyatt S. ....	Boston
Norris, Rolf C. ....	Methuen	Robertson, Oswald H. ....	New Bedford
Noyes, Nathaniel K. ....	Duxbury	Robey, William H., Jr. ....	Boston
Ober, Frank R. ....	Boston	Roble, Walter F. ....	Baldwinsville
Oberg, Frank T. ....	Worcester	Robinson, Henry A. ....	Marlboro
O'BRIEN, FRANCIS E., Navy ....	Northampton	Rochford, Richard A. ....	Boston
O'BRIEN, THOMAS J., Naval Reserve ..	Westboro	Rockwell, J. Arnold, Jr. ....	Cambridge
O'Connor, Dennis F. ....	Worcester	Roderick, Charles E. ....	Taunton
O'Connor, Patrick H. ....	New Bedford	RODGER, JAMES Y., National Guard ....	Lowell
O'Day, Sylvester F. ....	Ft. Andrews	RODRICK, ALBERT F., Naval Reserve ..	Fitchburg
O'Dea, Patrick J. ....	Attleboro	Rogers, Edmund A. ....	Brookline
Odeneal, Thomas H. ....	Beverly	ROGERS, JOHN A., Medical Corps ....	Lowell
O'Donnell, John J. ....	Boston	Rogers, Lester B. ....	Orange
Ohler, William R. ....	Boston		
Olin, Harry ....	Roxbury		

Rogers, Mark H. ....	Boston	Stevens, Franklin A. ....	Boston
Rogers, Orville F., Jr. ....	Dorchester	STEVENS, HORACE P., Naval Reserve ..	Cambridge
Rosen, Edward ....	Cambridge	Stick, Henry L. ....	Baldwinsville
ROSENBAU, MILTON J., Naval Reserve ..	Boston	Stickney, Whitney G. ....	Beverly
Rudman, Benjamin W. ....	Boston	Stoddard, James K. ....	Boston
Rumage, William T. ....	Boston	Stoddard, James L. ....	Boston
Rumrill, Samuel D. ....	Springfield	Stoddard, Mortimer J. ....	Springfield
RUSHFORD, EDWARD A., National Guard	Salem	Stone, James S. ....	Boston
Ryan, William F. ....	Lowell	STOWE, IRVING E., Naval Reserve ....	Brookline
Ryan, William P. ....	Holyoke	Strahlmann, Louis ....	Boston
RYDER, CHARLES E., Navy ....	So. Boston	Streeter, Edward C. ....	Boston
Salerno, Louis F. ....	Boston	Streeter, John F. ....	Springfield
Salmon, Charles A. ....	Worcester	Strong, Richard P. ....	Boston
Sanborn, Frederick R. ....	Lynn	Sturgis, Walter H. ....	Allerton
SAENO, AVERY H., Naval Reserve ....	Boston	Sullivan, Daniel J. ....	Boston
Savage, Joseph C. ....	Boston	Sullivan, John A. ....	Pittsfield
Sawyer, Alpha R. ....	Boston	Sumner, Harry H. ....	Lowell
Sayles, Joseph B. ....	Taunton	SURLS, JOSEPH K., National Guard ....	
Scanlon, Joseph M. ....	Lawrence	Sussler, David ....	Dorchester
Scannell, David D. ....	Boston	Sweeney, John G. ....	N. Cohasset
Scannell, Edward J. ....	Chelsea	Sweeney, Michael T. ....	Atlantic
Schadt, George L. ....	Springfield	Tate, Harry J. ....	Pittsfield
Schirmer, Joseph W. ....	Boston	Taylor, John H. ....	Cambridge
SCHLEY, WILLIAM S., National Guard	Lynn	Teague, Oscar ....	Boston
Schnack, Adolph G. ....	Cambridge	TENNEY, WM. N., National Guard ....	Canton
Schneider, Harry A. ....	Pittsfield	Thaxter, Langdon T. ....	Boston
Schofield, Otho L. ....	Wellesley	Thom, Douglas A. ....	Worcester
Schofield, Roger W. ....	Worcester	Thomas, Arthur W. ....	Boston
SCOTT, NORMAN M., Medical Corps ....	Boston	Thomas, Elmer E. ....	Northampton
Schwartz, George H. ....	East Boston	Thomas, Henry M. ....	Boston
Sears, Harry E. ....	Beverly	Thomas, John J. ....	Boston
SECORD, WALTER N., Naval Reserve ....	Newton	Thomes, John B. ....	Pittsfield
Segal, Joseph ....	Jamaica Plain	Tierney, Thomas F. ....	Hudson
SEGAL, SAMUEL, JR., Navy ....	Haverhill	Tobey, Harold G. ....	Boston
Sellards, Andrew W. ....	Boston	Towne, Edward B. ....	Boston
Sellew, Robert C. ....	Mill River	Tracy, John M. ....	Springfield
Senecal, Raymond E. ....	New Bedford	Trask, John W. ....	Lynn
Sewall, Clarence W. ....	Boston	Treichler, Albert J. ....	Springfield
Shapira, Albert A. ....	Boston	Truesdale, Philemon E. ....	Fall River
SHARP, ROBERT G., Red Cross ....	Boston	Tucker, Cassell C. ....	Boston
Sharry, Charles F. ....	Somerville	Tucker, Willis L. ....	Hinsdale
Shaw, John H. ....	Plymouth	TULLY, GEORGE L., Naval Reserve ....	Roxbury
Shea, Andrew F. ....	Lawrence	Tully, George W. ....	Southbridge
SHEEHAN, EDWARD B., National Guard	Boston	Turner, William K. ....	New Bedford
Sheehy, William C. ....	New Bedford	Tuttle, Howard R. ....	South Acton
Shepley, Luther J. ....	Fall River	Ullian, Louis J., ....	Boston
Shields, Warren S. ....	Boston	Underwood, George B. ....	Gardner
Shirk, George W. ....	Hatfield	Upton, Charles L. ....	Shelburne Fls.
Shultis, Frederick C. ....	Leominster	Van Gorder, George W. ....	Brookline
Shurtleff, Percy A. ....	Blandford	VAN METER, ABRAM L., Medical Corps ..	Boston
SILVERMAN, MAX, Naval Reserve ....	Brockton	Vaughan, Warren T. ....	Boston
Simmons, Edward B. ....	Worcester	Viets, Henry R. ....	Boston
Simmons, Hugh L. ....	Worcester	Vincent, Beth ....	Boston
Simmons, Ralph H. ....	Fall River	WALCOTT, WM. W., National Guard ..	Natick
Simpson, Joseph ....	Essex	Walker, Melvin H. ....	Pittsfield
Sinclair, Donald B. ....	Williamstown	WALSH, JAMES J., National Guard ..	Lexington
Skirball, Joseph J. ....	Boston	Ward, Edward S. ....	N. Attleboro
Skirball, Louis I. ....	Revere	Warden, Ralph A. ....	Boston
SLEEPER, FRANK W., Naval Reserve ....	Dorchester	Warren, John ....	Boston
Small, Albert E. ....	Melrose	Washburn, Frederic A. ....	Boston
Smith, Edwin E. ....	Quincy	WATERHOUSE, ROBERT M., Navy ....	Newton
Smith, Erdix T. ....	Springfield	Watkins, Harvey M. ....	Palmer
Smith, John J. H. ....	Cambridge	Watt, Charles H. ....	Fall River
Snow, Frank W. ....	Newburyport	Wearn, Joseph T. ....	Boston
Solomon, Sidney J. ....	Revere	Webber, Wolfert G. ....	Boston
Souther, William N. ....	Boston	Webster, John B. ....	New Bedford
Souther, Robert F. ....	Boston	Weiser, Walter R. ....	Springfield
Spellman, Martin H. ....	Whitman	WELBOURN, MARSHALL A., ....	
Spencer, Oscar L. ....	Lynn	National Guard ....	Boston
Spooner, Lesley H. ....	Boston	WESSELHOEFT, CONRAD, National Guard	Boston
Spruit, Charles B. ....	Boston	Wesselhoeft, William F. ....	Boston
Staatz, Karl S. ....	Worcester	Wheat, Harry R. ....	Springfield
*Stack, John J. ....	Boston	Wheatley, Frank E. ....	N. Abington
Stansfield, Clarence W. ....	Fall River	Whelan, Charles ....	Hingham
Stapleton, Willard Pierce ....	Worcester	WHELAN, EDMUND V., Naval Reserve ..	Bridgewater
St. Clair, Austin E. ....	Boston	WHIPPLE, GEORGE C., Red Cross ....	Cambridge
STEARNS, ALBERT F., Naval Reserve ....	Billerica		
STEEN, NEWTON S., Medical Corps ....	Jamaica Plain		
Stetson, Frank E. ....	New Bedford		

WHITCOMB, CLARENCE A.,	.....	
Naval Reserve	.....	Malden
White, George A.	.....	Cambridge
WHITE, JOHN R., Navy	.....	Lynn
WHITE, JOSEPH W., Navy	.....	Boston
White, Paul D.	.....	Boston
Wiggin, Ralph C.	.....	Boston
WIGGIN, WILLIAM I., Red Cross	.....	Lowell
Wilbur, George	.....	Boston
Wilhoit, Sterling E.	.....	Boston
WILLIAMS, FRANK P., National Guard	.....	Boston
Willson, Charles H.	.....	Chelsea
Winslow, Edward S.	.....	Easthampton
Wislocki, George B.	.....	Boston
WITHINGTON, ALFREDA B., Red Cross	.....	Pittsfield
Withington, Paul	.....	Boston
Withington, Paul Richmond	.....	Boston
Wood, William F.	.....	Boston
Woodard, James M.	.....	Salem
Woods, Alan C.	.....	Boston
WOODWARD, LEROY A., Naval Reserve	.....	Worcester
Woodworth, John D. R.	.....	Boston
Wright, Charles W.	.....	Lanesborough
*Wright, James H.	.....	Boston
Wright, Wade S.	.....	Boston
Wyant, John	.....	Boston
Wyman, Edwin T.	.....	Boston
Wyman, John H.	.....	Medway
Yeamans, Herbert W.	.....	Warren
Yousuf, Abraham K.	.....	Worcester

#### MASSACHUSETTS PHYSICIANS IN THE BRITISH SERVICE.

This is not an official list, and is necessarily incomplete. The committee would be glad to receive additions and corrections.

Bridges, Stanley	.....	Worcester
Cabot, Hugh	.....	Boston
Crabtree, Ernest G.	.....	Boston
Jouett, Fred R.	.....	Cambridge
MacKay, William H.	.....	Worcester
Raymond, Albert C.	.....	Worcester
Shattuck, George C.	.....	Boston
Shepard, William G.	.....	Lynn
Stansfield, Oliver	.....	Worcester

#### Obituary.

##### JAMES OLIVER, M.D.

DR. JAMES OLIVER, one of the most honored and well-known citizens of Athol, his native town, died recently at his home in Athol Highlands, at the age of 81 years.

Dr. Oliver had for many years been a leader in Athol affairs, and was for well over half a century a practising physician in that town. Some years ago he retired to enjoy his later years in the political field. He represented the district in which he lived for four years in the House. In both military and health affairs he took an active part, serving as chairman of military and health committees.

Dr. Oliver was the third of the same name to be born in Athol, and was the only son of James Oliver. He was born June 28, 1836. When he was seventeen he taught school at a salary of \$14 a month. Later he taught in North Orange and Phillipston and at intervals attended the local high school. He also taught in both the Athol Grammar and High Schools.

In 1860 he began the study of medicine with the late Dr. J. P. Lynde, finally becoming a practising physician in 1862. At the outbreak of the Civil War he was commissioned an assistant surgeon in the 21st Regiment. His record in the war was notable and honorable. At the second battle of Bull Run he was left in charge of the sick and wounded, was taken prisoner, but later managed to escape. He participated in the great battles of South Mountain and Antietam, and was later promoted to be surgeon of the 21st Regiment, on May 26, 1864. He went through many battles and was finally mustered out on July 30, 1865.

After a residence of a few years in South Carolina, where he engaged in planting and cotton raising, Dr. Oliver returned to Athol, where he resumed his medical practice. He was much interested in the social affairs of his town, the G. A. R., the Grange, the schools and town business generally. He was a prominent figure in town meetings where he showed much strong common sense. In debate he was an able speaker and could hold his own with the best speakers in Athol and in the State Legislature. He was a member of the Athol Lodge of Masons and a leader in the old First Unitarian Church.

During his life he held several town offices, being for a long period of time a member of the school board, and for many years medical examiner of his district. For about twenty years he was chairman of the Cemetery Commission of Athol, and rendered most valuable service.

In 1876 he married Miss Kate Johnson, daughter of the late George T. Johnson. Mrs. Oliver died some years ago. They had two children, Mrs. Annie J. Kendrick, who survives her father, and the late James Oliver, an only son, who died some years ago.

In 1916 Dr. Oliver published his autobiography, a book of 150 pages, in which he gives the history of the Oliver family from the date of the first settlement in Athol of the four brothers, John, James, Robert and William Oliver, who came to Athol from Hatfield in 1735. This auto-

biography is a most interesting and entertaining work, full of sketches of the life in Athol, anecdotes, stories, and accounts of events occurring before and during the Doctor's life. The book gives an account of the author's own life, his early trials amid straitened circumstances, his schooling, teaching, medical training. His story of his experiences in the Civil War is full of interest. In his capacity of surgeon of the 21st Regiment, he was most valuable to the Government and later received many testimonials in recognition of his services. Many of the Doctor's addresses before the Legislature are also comprised in this book, including those on health and military matters.

Personally, Dr. Oliver, often called Athol's grand old man, was delightful to meet and know. He was a great favorite in the Legislature, and was there held in great esteem both for his interesting conversation and pleasing personality. Absolutely honorable and unselfish, he was held in universal esteem and veneration.

### Miscellany.

#### MEMORIAL TO DR. CUTTS.

THE following memorial to Dr. Cutts was read and adopted at a meeting of the Brookline Medical Club on February 28, 1918:

"In the death of Harry Madison Cutts, a former President, the Brookline Medical Club has suffered a loss which it will be impossible to fill. It was chiefly through his efforts that the Club came into existence, and his interest in its welfare had been most keen. Always ready to do more than his share of work, he contributed much to the success of the Club. He helped in a large measure to unite the medical profession of Brookline and to develop a spirit of co-operation and good fellowship. The good ethical tone of medical practice in Brookline and the pleasant relations which exist between members of the profession are due in great part to the influence of Harry Cutts. The conscientiousness which characterized all his work, whether for his patients or the community, showed itself in the service which he gave to his country up to the last week of his life.

*Resolved*, That the deepest sympathy be expressed to his family in their great loss.

*Resolved*, That a copy of the above be entered

in our records, sent to his family, and published in the local papers.

B. S. BLANCHARD,  
G. H. FRANCIS,  
F. P. DENNY,  
*Committee."*

#### NOTICE OF COMPETITIVE EXAMINATION FOR QUALIFICATION ON THE ELIGIBLE LIST OF CANDIDATES FOR POSITIONS AS STATE DISTRICT HEALTH OFFICERS AND EPIDEMIOLOGIST IN THE MASSACHUSETTS STATE DEPARTMENT OF HEALTH.

Although the law leaves the appointment of District Health Officers and the Epidemiologist in the hands of the Commissioner of Health, it is the policy of the State Department of Health to hold competitive examinations as the principal basis for selecting appointees.

On April 1st and 2nd, 1918, and on subsequent dates to be announced at that time, an examination will be held for the purpose of establishing an eligible list of appointments to positions as State District Health Officers and Epidemiologist of the Massachusetts State Department of Health.

The written examination will be held on the above dates in the examination room of the Civil Service Commission, No. 15 State House, Boston. The oral and practical examinations will be held on dates and at places announced at the time of the written examination.

In the immediate future there will be one appointment to the position of State District Health Officer and one to the position of Epidemiologist.

Persons possessing the necessary qualifications and desiring to enter the competitive examination of this service are requested to communicate with the State Commissioner of Health, State House, Boston, at once. Upon such written application, a list of rules and regulations governing the appointment and promotion of District Health Officers and Epidemiologist and an application blank will be sent.

Admission to the examination is governed by these regulations. Physical fitness is a necessary prerequisite, but no percentage credits are given on physique. The examination comprises written, oral and, if feasible, practical tests.

Relative rating on the eligible list is established on the basis of:

- (a) Previous experience in public health work, both administrative and scientific—maximum 25 points.
- (b) Results of oral examination—maximum 25 points.
- (c) Results of written examination—maximum 50 points.

A. J. McLAUGHLIN,  
*Commissioner of Health.*

March 8, 1918.

## STATE DEPARTMENT OF HEALTH OF MASSACHUSETTS.

## REGULATIONS GOVERNING APPOINTMENT OF STATE DISTRICT HEALTH OFFICERS AND EPIDEMIOLOGIST.

**Grades.** (1) There shall be four grades, viz: A, B, C and D.

**Officers appointed only to Grade D.** (2) Candidates for these positions, after passing a successful examination, shall be eligible for appointment to Grade D.

**Form of application for appointment.** (3) Candidates must make application addressed to the Commissioner of Health in their own handwriting, asking permission to appear before a Board of Examiners. Candidates shall state their age, date and place of birth, present legal residence, names of colleges or institutions of learning of which they are graduates, date of graduation, and shall furnish testimonials as to their professional experience and moral character.

**Age Limit.** (4) No candidate will be eligible to appear before a Board of Examiners whose age is less than twenty-three years or more than forty years. Candidates over thirty-five must have had at least three years' practical experience in public health work.

**Professional Requirements.** (5) Candidates shall be graduates of an incorporated medical school, or shall have had at least five years' experience in public health work and sanitary science.

**Citizenship.** (6) All candidates must be citizens of the United States, and preference in appointment shall be given to residents of Massachusetts.

**Physical Examination.** (7) Candidates for appointment must pass a satisfactory physical examination before a Board of Examiners.

**Board of Examiners.** (8) The Board of Examiners shall consist of three or more members. These members shall be selected by the Commissioner of Health from the Public Health Council or other officials of the State Department of Health.

**Scope of Examination.** (9) All examinations of candidates shall be conducted by a Board of Examiners, and the examination shall include a physical examination and such oral, written and practical tests as the Board deems necessary in the subjects outlined in the succeeding sections. Experience and fitness shall also be rated by the Board of Examiners.

**Subjects for Written Examination.** (10) All candidates for appointment must pass a satisfactory written examination in Communicable Diseases, Hygiene and Sanitation, Preventive Medicine, Vital Statistics, Pathology and Bacteriology.

**Compensation.** (11) The compensation of District Health Officers and Epidemiologist shall be as follows:—

Grade A .....	\$3500.00
Grade B .....	3000.00
Grade C .....	2500.00
Grade D .....	2000.00

**When Promoted.** (12) After six months' satisfactory service in Grade D, an officer is entitled to promotion to grade C. After three years' satisfactory

service in Grade C, an officer is entitled to examination for promotion to Grade B. After five years' satisfactory service in Grade B, an officer is entitled to examination for promotion to Grade A.

**Examinations for Promotion.** (13) Examinations for promotion shall be conducted by a Board of Examiners, who shall take into account the efficiency record of the candidate as well as his professional and physical fitness. Failing first examination an officer may be given a second examination after one year. Failing two successive examinations, such an officer shall be dropped from the rolls.

**Tenure of Office.** (14) A District Health Officer or an Epidemiologist may be removed from office by the Commissioner of Health because of failure to pass two successive examinations for promotion, or because of gross misconduct or inefficiency, but only after the accused officer has been furnished with a copy of the charges made against him and given a hearing thereon by the Public Health Council.

**Note.** In view of war conditions, the maximum age limit will not be strictly adhered to in candidates whose other qualifications are exceptional. No candidate of military age will be considered unless he can convince the Board of Examiners that he is to be exempted from military service, either on grounds of dependency or on physical disability. In regard to the latter cause for exemption from military service, he should bear in mind the physical requirements for the position he is seeking, and that many causes for rejection from the service would operate here.

## SOCIETY NOTICES.

**SUFFOLK DISTRICT MEDICAL SOCIETY.**—A meeting of the Medical Section will be held on Wednesday evening, March 20, 1918, at the Boston Medical Library, at 8.15 P.M.

James Alexander Miller, M.D., who was one of a commission sent to France last summer by the Rockefeller Foundation to study the problem of tuberculosis, will speak on "Social and Health Conditions among the Civilian Population of France." Light refreshments after the meeting.

GILBERT SMITH, *Secretary.*

**WORCESTER DISTRICT MEDICAL SOCIETY.**—The regular meeting will be held Wednesday, March 13, at 4.15 P.M., in G. A. R. Hall, 55 Pearl Street, Worcester.

Paper—"Some Surgically Remediable Gastro-Intestinal Diseases," by Dr. Michael F. Fallon, Worcester. The paper will be illustrated by lantern slides.

Dr. A. W. Marsh will report progress on the plans for Medical Mobilization in case of a great local disaster.

ERNEST L. HUNT, *Secretary.*

## RECENT DEATHS.

SALLIE JUSTINA ERMENBOUT, M.D., a former practitioner in Boston, died at Eldridge, California, of lobar pneumonia, November 14, 1917, aged 60 years. She was born in Reading, Pa., May 18, 1857, graduated at the Woman's Medical College of Pennsylvania, Philadelphia, in 1891, and settled in Boston, joining the Massachusetts Medical Society in 1893. She moved to California in 1913.

JOHN GEORGE BLAKE, M.D., died at his home in Boston, March 4, 1918, aged 80 years.



# "Rheumatic" Pain

Is there anything more satisfyingly warming to a painful rheumatic joint than a liberal application of K-Y ANALGESIC, followed by covering the part to keep in the warmth?

## K-Y ANALGESIC

"A POWER FOR COMFORT"

DOESN'T BLISTER

DOESN'T SOIL

DOES WASH OFF

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## CONTENTS

### ADDRESS

THE VALUE OF THE PHYSICIAN AND OF THE NURSE IN SOCIAL SERVICE WORK IN TUBERCULOSIS.  
*By John B. Hawes, 2d, M.D., Boston.*

### ORIGINAL ARTICLES

SPONTANEOUS PNEUMOTHORAX. *By Philip H. Pierson, M.D., San Francisco.*  
OBSERVATIONS ON DISABLED SHOULDERS. *By Hilbert F. Day, M.D., Boston.*  
THE RED STREAK. *By Edward A. Tracy, M.D., Boston.*  
WELFARE INSURANCE AND THE FACTORY. *By J. F. Curran, M.D., Worcester, Mass.*  
THE CONTROL OF SMALLPOX EPIDEMIC BY VACCINATION. *By A. G. Gould, M.D., Akron, O.*

### CLINICAL DEPARTMENT

PREOPERATIVE DIAGNOSIS OF HAIR CAST OF STOMACH. *By Frederick W. O'Brien, M.D., Boston*

### EDITORIALS

THE CAUSES OF EYESTRAIN.  
ANNUAL REPORT OF THE PHILIPPINE HEALTH SERVICE FOR 1916.  
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INDICATIONS FOR LOCAL ANESTHESIA.  
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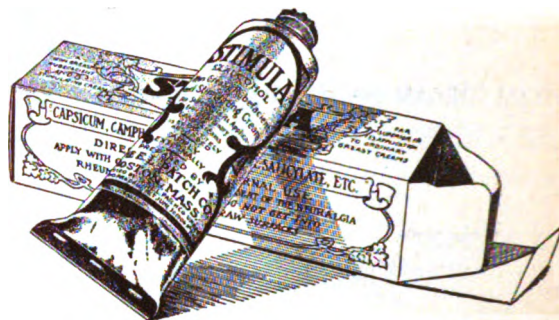


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### MEDICINE.

#### MEDICAL EDUCATION, MEDICAL INTERNES AND THE WAR.

ARNOLD (*Jour. Amer. Med. Assn.*, Feb. 16, 1918) gives a concise but thorough review of the medical-war situation, in regard to education. He takes up the question of the enlistment of medical students, teaching continuously throughout the year, reorganization of the curriculum, quality of interne service, medical teachers, and premedical students.

[E. H. R.]

### SURGERY.

#### FAT EMBOLISM FOLLOWING TRAUMA TO BONES.

CALDWELL AND HUBER (*Surg., Gyn., and Obs.*, Dec., 1917) review briefly the literature on the subject and also the experimental data, and then give the results of their own animal experiments and the conclusions drawn. They found that crushing the tibias of mature rabbits produces a moderate and fairly constant amount of fat embolism, as determined by counting the fat droplets in a large number of representative microscopic fields, in stained sections of lung tissue. Esmarch constrictors, placed on the legs previous to crushing and removed after two hours, lessen distinctly the amount of fat entering the lungs during the remainder of the experimental period. The amount of fat embolism which develops after the removal of the constrictors is dependent largely upon the activity of the animals. The removal, by means of a motor saw, of splints from the tibias of normal dogs and rabbits produces an appreciable but a very small amount of pulmonary fat embolism. The use of the chisel for removal of the tibial splints from dogs increases very slightly, if at all, the amount of fat entering the circulation. The spinal part of the Albee bone transplantation operation produces more fat embolism than does the tibial part. [E. H. R.]

#### ROENTGENOLOGICAL STUDIES IN THE HEALING OF GASTRIC AND DUODENAL ULCERS.

HAMBERGER (*Amer. Jour. Med. Sci.*, February, 1918) describes his method of studying the healing of gastric (7 cases) and duodenal ulcer (4 cases) as follows: Before treatment the patient is subjected to a thorough preliminary roentgenological study, including the registering of from six to twelve plates taken at intervals after the barium meal. From three to six weeks after the institution of medical treatment a second series of plates is taken, and at least every three months for a period of one year, unless relieved entirely before this time. The method gives valuable data as to diagnosis, prognosis, control of medical treatment and selection of cases for surgical treatment. Thus far it has not proved of value in differentiating between cancer and ulcer.

[E. H. R.]

(Continued on page vi.)

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(*Ichthyol albuminate*)

An easily absorbed preparation for the internal administration of ichthyol

## INDICATIONS:

Internal treatment of skin diseases  
As a tonic in cachectic conditions  
And as an intestinal disinfectant

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As is well known, the slightest irregularity during the process of making Salvarsan may cause the formation in it of toxic by-products. In order to protect the public and ourselves against the effects of any accidental irregularities in manufacture, we ascertain toxicologically whether or not each lot of Salvarsan prepared by us is free from toxic by-products. These tests are in addition to those prescribed by the United States Public Health Service and are made by the head of the Department of Biological Chemistry in one of our leading university medical schools, who bears the same judicial attitude to our preparations that Prof. Paul Ehrlich did to the standard German preparations, and who subjects them to biological tests that he considers more rigorous and comprehensive than those adopted for this purpose by Prof. Ehrlich himself. They are made and reported upon before the product is submitted to the United States Public Health Service for its tests, thus insuring a double and absolute check on every lot of Salvarsan turned out.

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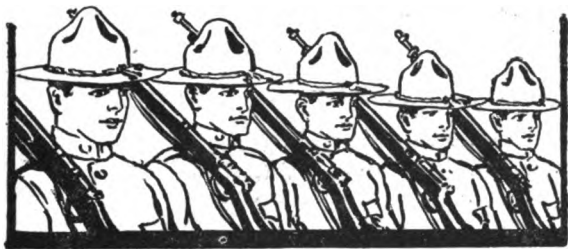
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(Continued from page iv.)

### POSTOPERATIVE PULMONARY COMPLICATIONS.

CUTLER AND MORTON (*Surg., Gynec., and Obs.*, Dec., 1918), in a very thorough and comprehensive article, state that the subject is so hard and diversified as to be impossible of discussion within moderate bounds. One is struck by the large percentage of lung complications in some clinics and the relative freedom in others. These results are found to be largely due to preoperative care and preparation of the patient, together with more expert anesthesia. It is probable that ether pneumonia as a definite entity does not exist as such, but is practically always dependent on other preceding factors, such as exposure during operation, preëxisting lung pathology or small emboli. This does not mean that the anesthetic does not play a more or less definite rôle in the production of these postoperative conditions. Probably neither the anesthetic nor any one factor is responsible, but many varying factors, such as poor general condition, oral sepsis, preëxisting lung pathology, anesthesia badly given, presence of septic foci, too radical operations, exposure to cooling fluids, etc., should be considered as the probable factors in the production of postoperative pulmonary complications. Careful oral preparation, careful ruling out of lung disease, careful anesthesia, avoidance of exposure, trauma and sepsis are the definite means of prevention recommended. [E. H. R.]

### THE VALUE OF EYE-GROUND OBSERVATIONS IN RECENT CASES OF FRACTURE OF THE SKULL.

KEARNEY (*Jour. Amer. Med. Assn.*, Oct. 27, 1917), in a concise statement of his observations, shows that in cases of fracture of the skull in which there is increased intracranial pressure there is very soon a slight, well-marked edema blurring the usual band marks of the fundus. This may be the earliest indication of use in intracranial pressure, and in nearly every instance will be found to be accompanied by an increase in the pressure of the cerebrospinal fluid as determined by lumbar puncture. On these findings a definite outline of treatment can be determined, as follows: All patients with fracture of the skull are put to bed, kept absolutely quiet, free catharsis is maintained, a liquid diet is given, and the ice helmet applied to the head. If no signs of pressure develop, the above treatment is all that is given. If, however, the cerebrospinal fluid is found by the ophthalmoscope and by lumbar puncture to be double or more than double the normal, decompression is resorted to before possible collapse of the medulla can occur. [E. H. R.]

### ACUTE APPENDICITIS: AN ANALYSIS OF 500 CASES.

BEEKMAN, SMITH AND EVERINGHAM (*Amer. Jour. Med Sci.*, Oct., 1917), from their analysis, find a mortality in their series of 6.8%, and believe that this mortality figure may be greatly improved by making an early diagnosis followed by immediate operation. The mortality of those operated upon during the first day is less than 1%, whereas by the third day it is over 10%. Mortality is higher in the young than in the old. Death can be ascribed to intra-abdominal suppuration in 82% of the 34 fatal cases; in 21, or 62%, it was due to a diffuse general peritonitis. A temperature of over 104° is usually indicative of diffuse peritonitis. Abscess was found in 21%, while diffuse peritonitis was found in but 9%; however, the mortality in the former was but 5.6% compared with 47% in the latter. In 12 cases with diffuse peritonitis, where operation was done within 48 hours there was no mortality. The authors emphasize the fact that operation should be performed as soon as the diagnosis is made, for the shorter the period between the onset of the disease and the surgical interference, the better the prognosis. [E. H. R.]

(Continued on page viii.)

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(Continued from page vi.)

### INTESTINAL OBSTRUCTION.

DRAPER (*Jour. Amer. Med. Assn.*, Nov. 24, 1917), in a continuance of his well-known work on intestinal obstruction, complete and incomplete, finds, from further studies on the chemistry of the blood, carried out by Prof. Gettler of New York University, that in duodenal obstruction death is not due to any form of bacterial action or to toxins derived from the food, but to a disturbance of the hormone- or enzyme-producing activities of the intestinal epithelium and the consequent production of toxic bodies that cannot be isolated by ordinary chemical analysis. In other words, death is caused by conditions analogous to those induced by removal of the parathyroids or other endocrinal glands. That bacterial toxins seem to complicate the syndrome of autotoxemia is not to be questioned, particularly in view of the work of Satterlee, who has achieved such marked results in otherwise hopeless cases through the injection of autogenous colonic vaccines. [E. H. R.]

### THE UTILIZATION OF THE IMMUNE RESPONSE IN RENAL TUBERCULOSIS.

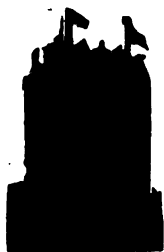
BONIME (*Amer. Jour. Med. Sci.*, Oct., 1917) summarizes his beliefs in regard to the treatment of renal tuberculosis by stating that the prognosis in renal tuberculosis up to the present has been unfavorable under the present-day methods of treatment.

Nephrectomy as an operation for the relief of the patient suffering from tuberculosis in the kidney is a failure, for it fails to remove the focus of infection outside of the kidney, leaving the patient liable to extension of the infection to the remaining kidney from the same focus. The tuberculin treatment of renal tuberculosis has not been as satisfactory as the tuberculin treatment of other forms of tuberculosis, because of the inability to make an early diagnosis; (2) because of the production of early damage before the tuberculin treatment was instituted; (3) as a result of the failure to recognize the important rôle that mixed infection plays in the production of symptoms and pathological processes. However, enough has been shown with tuberculin treatment of renal tuberculosis, in fact, to make it almost certain that were it instituted before permanent damage has resulted—in other words, early in the disease—the prognosis of renal tuberculosis would have a far more favorable aspect. Early diagnosis in renal tuberculosis can be accomplished through the tuberculin test alone. Its more frequent use in early symptoms referable to an indefinite lesion anywhere in the urinary tract is absolutely essential to the more hopeful treatment of renal tuberculosis. [E. H. R.]

### A REPORT OF BACTERIAL VACCINE THERAPY IN A SERIES OF PROSTATIC CASES.

H. C. BUMPUS (*Jour. Amer. Med. Assn.*, Jan. 26, 1918) concludes from his clinical work that:

1. Immunity to pyelonephritis by means of mixed colon bacillus vaccine cannot be produced.
2. The administration of mixed colon vaccine does not markedly reduce the incidence of genito-urinary infection, if it affects it at all.
3. Preoperative attacks of pyelonephritis are the natural means of producing an immunity to renal infection, and their occurrence makes operative risks less.
4. The length of convalescence is usually in inverse proportion to the length of preoperative treatment. [E. H. R.]



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# The Boston Medical and Surgical Journal

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March 21, 1918

ADDRESS		
THE VALUE OF THE PHYSICIAN AND OF THE NURSE IN SOCIAL SERVICE WORK IN TUBERCULOSIS; THE RESPONSIBILITY OF EACH TO THE STATE AND TO THE PATIENT. <i>By John B. Hawes, 2d, M.D., Boston.</i>	381	THE ORGANISM AS A WHOLE. <i>By Jacques Loeb, M.D., Ph.D., Sc.D.</i>
		Text-Book of Surgical Operations. <i>By Prof. Fedor Krause and Emil Heymann, M.D.</i>
		A Text-Book of Histology. <i>By Frederick R. Bailey, A.M., M.D.</i>
		Wound Infections. <i>By Colonel Sir Almroth E. Wright.</i>
		A Laboratory Manual of Organic Chemistry. <i>By Matthews Steel, Ph.D.</i>
		Habits that Handicap. <i>By Charles B. Towne.</i>
		A System of Case-Taking. <i>By G. W. Ross and Julian Loudon.</i>
		Diagnosis from Ocular Symptoms. <i>By Matthias L. Foster, M.D.</i>
		The Secretion of Urine. <i>By A. R. Cushny, M.D.</i>
ORIGINAL ARTICLES		
SPONTANEOUS PNEUMOTHORAX. <i>By Philip H. Pierson, M.D., San Francisco.</i>	385	
OBSERVATIONS ON DISABLED SHOULDERS, WITH ESPECIAL REFERENCE TO SUB-ACROMIAL BURSITIS. <i>By Hilbert F. Day, M.D., Boston.</i>	389	
THE RED STREAK: A SIGN OF DISEASE. <i>By Edward A. Tracy, M.D., Boston.</i>	392	
WELFARE INSURANCE AND THE FACTORY. <i>By J. F. Curran, M.D., Worcester, Mass.</i>	394	
THE CONTROL OF A SMALLPOX EPIDEMIC BY VACCINATION. <i>By A. G. Gould, Ph.M., M.D., Akron, Ohio.</i>	395	
CLINICAL DEPARTMENT		
PREOPERATIVE DIAGNOSIS BY ROENTGEN RAY OF HAIR CAST OF STOMACH. <i>By Frederick W. O'Brien, M.D., Boston.</i>	396	
BOOK REVIEWS		
A Manual of Organic Materia Medica and Pharmacognosy. <i>By Lucius E. Sayre, B.S., Ph.M.</i>	397	
Diet for Children. <i>By Louise E. Hogan.</i>	398	
Principles of Diagnosis and Treatment in Heart Affections. <i>By Sir James Mackenzie</i>	398	
Traumatic Pneumonia and Traumatic Tuberculosis. <i>By F. Parkes Weber, M.A., M.D.</i>	398	
The Biology of Tumors. <i>By C. Mansell Moulin, M.A., M.D.</i>	399	
The Year-Book of the Bureau of Preventable Diseases. <i>By John S. Billings, M.D.</i>	399	
EDITORIALS		
		THE CAUSES OF EYE-STRAIN. .... 402
		ANNUAL REPORT OF THE PHILIPPINE HEALTH SERVICE FOR 1916. 403
		THE SCOPE OF MENTAL HYGIENE. .... 404
		INDICATIONS FOR LOCAL ANESTHESIA. .... 405
		ANNUAL REPORT OF THE BOSTON MEDICAL LIBRARY. .... 406
		MEDICAL NOTES. .... 407
CORRESPONDENCE		
		BACTERIOLOGY OF CEREBROSPINAL MENINGITIS. <i>Wm. D. Reid, Lieut., M.O.R.C.</i> .... 415
		VENEREAL DRUG LEGISLATION. <i>James Brown Thornton, M.D.</i> 416
MISCELLANY		
		MALNUTRITION AMONG SCHOOL CHILDREN. RESULT OF A RECENT INVESTIGATION. .... 410
		CHILDREN FIRST. .... 411
		HYGIENE AND SANITATION IN JERUSALEM. .... 412
		MORE NURSES NEEDED FOR WAR SERVICE. .... 414
		VENTILATION AFTER FUMIGATION. .... 414
		APPLICATION OF OZONE TO PURIFICATION OF SWIMMING POOLS. 415
		NOTICES, RECENT DEATHS, ETC. .... 416

### Address.

#### THE VALUE OF THE PHYSICIAN AND OF THE NURSE IN SOCIAL SERVICE WORK IN TUBERCULOSIS; THE RESPONSIBILITY OF EACH TO THE STATE AND TO THE PATIENT.\*

BY JOHN B. HAWES, 2d, M.D., BOSTON,

*Secretary of the Trustees of Hospitals for Consumptives; Director Tuberculosis Clinic, Massachusetts General Hospital.*

Two very distinct subjects have been given me to discuss, and there is much that might be said concerning each of them.

I may well introduce what I have to say concerning the responsibility of the nurse and of the physician to the state and to the patient with these statements, in each of which I am a sincere believer:

1. Every tuberculous patient, as far as it is possible, should, at some time, have sanatorium treatment, but:

2. The patient's sojourn in a sanatorium should be looked upon as an incident of great, or less, importance in a course of treatment, the most important parts of which come before his

entrance and after his departure from the sanatorium.

3. The responsibility of physician and nurse does not end when the patient is admitted to a sanatorium or hospital.

At present the tuberculosis sanatorium or hospital is one of the most important, and certainly the most striking, factor in our campaign against consumption; as time goes on, however, I believe that the part played by institutions will be a smaller and smaller one, while that of physician and nurse, in private or public capacity, will become of increasing importance. We have reached the point, in Massachusetts at least, when we realize that the patient's stay in a sanatorium is only a means to an end and that the period before he enters the sanatorium, and after he is discharged, is equal in importance, as far as his own welfare is concerned, to that spent in the institution itself. The physician, and particularly the nurse, may be of inestimable service in covering these two periods, before and after the patient undergoes institutional treatment. The responsibility of the medical profession goes further than merely making the diagnosis of tuberculosis and getting the patient into a sanatorium. We are far too apt to feel that our duty is done, and well done,

\* Presented before the Framingham Medical Club and Community Health Station, January 31, 1918.



as soon as we get our patients into Rutland, for instance. We do not always realize that we have a responsibility toward the patient's family, toward the public at large, and that our responsibility toward the patient continues after he leaves the institution.

In an idealized plan for controlling tuberculosis, the following factors should play important parts:

1. The elimination of sources of infection, both human and bovine.
2. The education of the public, and particularly of children, in methods of right living and proper hygiene.
3. The early diagnosis of clinical tuberculous disease in adults and children.
4. Sanatorium treatment for the education and care of favorable and suitable cases.
5. Hospital treatment for the care and isolation of advanced, progressive cases.
6. Supervision of the tuberculous patient before and after leaving an institution, and at all times if the patient does not, or cannot, have institutional care.

I shall take up these various points briefly and will try to point out in as practical a way as I can where the nurse, and through her, social service,—or as I prefer to call it, “applied common sense,”—can do the most good, and, where the physician's responsibility lies.

#### THE ELIMINATION OF SOURCES OF INFECTION, BOTH HUMAN AND BOVINE.

As far as bovine sources of infection are concerned, this is largely a state or administrative problem. In all cases where there is any question as to the cleanliness of the milk supply the physician might well advise pasteurizing the milk, and the nurse can give instructions as to how best to do this.

The elimination of human sources is a far more difficult task. Could we bring this about, our tuberculosis problem would be easily and quickly solved. This, likewise, is largely a state and administrative problem, yet the nurse and the physician have a very definite responsibility in doing their share to eliminate such sources. Although theoretically, we all believe that it should be done, I wonder how many of us physicians insist emphatically that when we make a diagnosis of tuberculosis in one member of the family that every other member

of the family should be carefully examined. I feel very sure that this procedure is not carried out anywhere near as often as it should be. Among the poorer classes, particularly in school work, the nurse can arrange this more easily than the doctor. As often happens in medicine, the poor classes and the rich classes get the best treatment. It is the patients who come to our own offices, who are unwilling to go to a big public clinic, and who pay us a moderate fee, who often get the poorest treatment. Personally, I find it very hard to ask a man with active tuberculosis, who has come to me for advice, and who has cheerfully paid my bill, although I know that he is in very moderate circumstances, to bring in his wife and children for examination, at what he knows will be an additional expense; and yet I feel that it would be a good investment on his part.

How many elderly persons are there with so-called “New England winter coughs” who have coughed and raised profusely for many years and yet maintained very good health in spite of it, who, on close examination, will be found to have chronic phthisis, and who thus explain the cases of consumption among the younger members of the family? In my own practice, I can name a good many instances where tragedies of this sort have occurred because of neglect on the part of the physician to inquire into such sources of infection. Are we sufficiently strict about not allowing a consumptive father or mother to live at home without the training that a stay, even a short stay, in a properly run sanatorium gives? Personally, I do not think that we are. It has often been said that the intelligent consumptive is no more a source of danger to those about him than a man with a wooden leg. I do not feel so sure of this as I used to, and the more I see of tuberculosis work, the more firmly I believe that every consumptive, whenever possible, should undergo sanatorium treatment, if only for a short period. Dr. Joseph H. Pratt and Dr. Nathaniel K. Wood, of Boston, have both done excellent work in showing us what home treatment really means. Indeed, I have been most intimately connected with this work myself, and before our present sanatorium system was developed in Massachusetts have urged this method of treatment in almost every city in the state. In my experience in the State House during the past ten years, where we deal with the tuberculosis problem as a whole, and not with individual patients, I do

not now feel that home treatment ever can, or should, take the place of sanatorium treatment among the poorer classes if the sanatorium is in any way available.

So, here, in the elimination of human sources of infection, the nurse and the physician have a very definite responsibility and can accomplish much good.

#### THE EDUCATION OF THE PUBLIC AND PARTICULARLY OF CHILDREN IN METHODS OF RIGHT LIVING AND PROPER HYGIENE.

Seven or eight years ago I was instrumental in having passed through the legislature an act (Chap. 181, Acts of 1908) which demanded that tuberculosis, its cause and prevention, be taught in the grades of our public schools in which the subjects of hygiene and physiology are taught. I also helped to construct some school tuberculosis exhibits to show in a striking and graphic way the general subject of right living as applied, not only to tuberculosis, but to health and disease in general. I well remember the words of an eminent physician who was much opposed to such legislation as this and who felt that children should not know anything about such subjects. I could not agree with him then nor can I now. I believe that there is no more important subject taught in our schools than the elementary principles of hygiene. I should like to see the three R's, reading, writing, and arithmetic, sacrificed in order to hammer into the heads of our school children the question of the proper care of their bodies and good habits in regard to the care of the teeth, bathing, eating, sleeping, exercise, fresh air, etc.

Again, among the poorer classes, at least, such work as this does not so much involve the private practitioner and the nurse. Nevertheless, the physician has a very definite responsibility in instructing the parents of the children with whom he comes into contact and the children themselves concerning such matters, whereas the opportunity for the nurse to do good in this direction is almost unlimited.

#### THE EARLY DIAGNOSIS OF CLINICAL TUBERCULOUS DISEASES IN ADULTS AND CHILDREN.

This is a subject in which sanity and common sense is very much needed in Massachusetts.

One must make a distinction between tuberculous infection, which most of us have, and tu-

berculous disease which most of us have not. It is not the nurse's duty to make the diagnosis of consumption, but it is her duty to be able to recognize the danger signals and to teach mothers, fathers, and children concerning them, and to bring them to the attention of the family or the school physician. We physicians must constantly bear in mind the responsibility we are assuming when we state that any given patient has or has not pulmonary tuberculosis. We must remember the value of constitutional signs and symptoms, fever, loss of weight and strength, etc., as compared with localized signs in the lungs. We must realize that absence of proof is not proof of absence, and that because we cannot find striking abnormalities in the lungs it does not follow that the patient who has lost weight and strength and who is running a slight fever is free from active tuberculous disease.

In my own work I am coming in contact with two extremes in the diagnosis of tuberculosis. The younger men in our large cities are, apparently, eager to find evidence of tuberculosis and are occasionally finding such where none exists. At the Massachusetts General Hospital I am constantly unmaking diagnoses of consumption and trying, not always successfully, to undo the harm which has been done by over-enthusiasm in this regard. On the other hand, in the country districts at a distance from the large medical centres, there are still far, far too many physicians who do not know how to recognize incipient pulmonary tuberculosis and who are carrying the patient along under such vague and misleading terms as weak lungs, a spot on the lungs, chronic bronchitis, anemia, debility, and others. I believe that the diagnostic standards drawn up for the use of the Framingham Experiment will be of great value, and merit earnest study, on the part of every physician.

#### SANATORIUM TREATMENT FOR THE EDUCATION AND CARE OF FAVORABLE AND SUITABLE CASES.

The physicians of Massachusetts are not responsible for the management of our state sanatoria. That responsibility rests on a board of trustees and the Commonwealth of Massachusetts, but the responsibility of making effective the treatment which our sanatoria are offering and of making the investment that the State of Massachusetts is putting into these institutions

a good investment does rest very largely with the medical profession of Massachusetts. I do not believe that we sufficiently realize this responsibility. I do not believe that the average physician knows as much as he ought to know concerning the place to which he is sending his patients. I doubt if he reads at all carefully the detailed circulars of information which are sent out to every physician in the state from time to time, and I am sure that the percentage of physicians who have ever visited a tuberculosis sanatorium of any kind whatsoever is an extremely small one. At the largest medical school in Massachusetts young men are graduated every year and given the degree of Doctor of Medicine with practically no knowledge of what our tuberculosis problem is and what Massachusetts offers in the way of sanatorium treatment.

I believe that we, as physicians, ought to have a very definite knowledge concerning such matters, and that before we advise any of our patients to go to a state sanatorium or, as not infrequently happens, advise them *not* to go to a state sanatorium, that we should know in considerable detail where the patient is going, what he will receive in the way of treatment, what he can expect in the way of improvement, and what such improvement depends upon. Far too many patients are entering our state institutions with an attitude partly, at least, instilled by their physicians, "Here I am. Now feed me and cure me." Many of the difficulties that our superintendents meet in persuading our patients to take proper treatment would be done away with were every patient given a frank, plain, common sense, and, if necessary, severe talk, to show him that the successful outcome of his case depended far more upon the amount and quality of his brains than upon the amount of diseased tissue in his lungs. There is a tremendous opportunity for physicians and nurses to do good in this direction.

At the State House, at the Massachusetts General Hospital, and in my own private work, I am constantly meeting patients who have come back from a sanatorium with apparently little or no idea as to why they really went there, and what they should have learned. This is not altogether the fault of our sanatoria. I fully realize that at Rutland, for instance, four physicians, one of whom is engaged almost entirely in administrative work, cannot go into much detail with 350 patients, and that until there are either more physicians

or fewer patients, the state of affairs will not be altogether satisfactory. But we physicians who send our patients to Rutland, to North Reading, and elsewhere, can be of great service in helping to make this problem a less difficult one by giving our patients some common sense ideas as to what they must do to get well, and by reminding them that their getting well depends largely on themselves.

#### HOSPITAL TREATMENT FOR THE CARE AND ISOLATION OF ADVANCED, PROGRESSIVE CASES.

It is not a pleasant task to advise any patient to go to a tuberculosis hospital when we know, and the patient knows, that in all probability the outcome of his case is going to be anything but a favorable one. I do not see how a hospital for advanced, progressive, and dying cases of consumption can be anything but more or less unpopular, and yet such hospitals play a most important part in our tuberculosis scheme. The medical profession and the nursing profession should do more than they are now doing to make these institutions effective, to get into them the patients who should go there, and to see that they are made as attractive as it is possible to make them. If there is anything really at fault with such a hospital, so that it deserves its unpopularity, pitiless publicity should be exercised until the fault is remedied by those in a position to remedy it. I do not think for a minute that we are going to accomplish much-needed changes in many of our local tuberculosis hospitals by simply refusing to send our patients there, by advising them not to go, by saying that they are nothing but death houses or morgues, or by using similar language the echoes of which constantly reach me at the office of our trustees at the State House. The waiting list for our state sanatoria is a distressingly long one. A patient must wait at least two months, and at present a longer time, before he can possibly be admitted to any one of them, while at Westfield there is nearly a six months' interval between the filing of the patient's application and his final admission. Yet there are many physicians, and, I am afraid, nurses also, who are advising their patients not to go to this or that local tuberculosis hospital where they can get under cover and wait comfortably until they can enter a state sanatorium.

I, personally, am acting under the strictest injunctions from the board of which I am secre-

tary, not to admit far advanced, progressive, and unfavorable cases to our sanatoria. I am constantly meeting such patients, however, who positively refuse to occupy a bed available for them in some local tuberculosis hospital and who are led to believe by their physicians that they can eventually gain admittance to a state sanatorium. It is not a pleasant task to have to tell such patients the truth.

SUPERVISION OF THE TUBERCULOUS PATIENT BEFORE AND AFTER LEAVING AN INSTITUTION, AND AT ALL TIMES IF THE PATIENT DOES NOT OR CANNOT HAVE INSTITUTIONAL CARE.

Energy and common sense in this direction, will do untold good. The work that our after-care nurse, Miss Bernice Billings, has done during the past five or six years shows what one woman can do. The plan of the State Department of Health to provide a number of nurses whose duty it is to be to look after discharged sanatorium patients and all other patients who do not go to an institution, with Miss Billings at the head of such a corps of nurses, will, I firmly believe, do more to decrease our tuberculosis death rate, and to make our anti-tuberculous efforts effective, than any one thing the State of Massachusetts has done for years. But every physician, and every nurse, should bear in mind that unless Miss Billings, and the corps of nurses under her supervision, have the earnest and hearty coöperation of the medical and nursing profession, their efforts will be more or less unavailing. With at least 10,000 consumptives in Massachusetts who are in need of active and aggressive treatment,—and this I believe to be a conservative estimate,—it is evident that no one woman, directing the work of a dozen or so nurses, can do very much; but if a plan can be brought into operation whereby Miss Billings and each one of her nurses are in active and close coöperation with nurses, physicians, dispensaries, tuberculosis associations, boards of health, and private physicians throughout the state, then we will accomplish something.

I hope, before long, to see the proper machinery in operation whereby, whenever the diagnosis of pulmonary tuberculosis is made in the case of any man, woman, or child in this state, certain things will be done, including the examination of the other members of the family, proper supervision of the patient himself until

he can go to a sanatorium or hospital, adequate care of the other members of the family, if the bread-winner is removed, and finally, steps taken so that when the patient leaves the sanatorium or hospital he will return to proper home conditions, to work suited to his needs, and that at all times he will be under proper supervision, whether he likes it or not. This happy state of affairs will result only if we, as physicians or nurses in our private capacity, will realize the need of it, and will do our share to help, and realize and assume our responsibilities to the state and to the patient, some of which I have here outlined.

### Original Articles.

#### SPONTANEOUS PNEUMOTHORAX.\*

BY PHILIP H. PIERSON, M.D., SAN FRANCISCO.

THIS term, "spontaneous pneumothorax," has been used in the literature to refer to cases of natural pneumothorax in persons with no demonstrable lung disease and, consequently, in apparently good health. It is also called by some, "idiopathic pneumothorax," "latent pneumothorax," "pneumothorax with insidious onset," "pneumothorax silencieux," as well as other terms indicating a non-tuberculous etiology.

Up to 1902, Russell and Riessman had been able to collect only 56 cases from the literature, and in 1912 Nickolsky reported 90 cases, which included the 56 above mentioned. From this it can be seen that the condition is not a common one, although it may be more often present than recognized. In healthy individuals its onset may be so insidious and the signs, where there is only a partial collapse, so vague that without urgent symptoms the condition may be easily overlooked in hurried examinations of the chest. Among others more recently, Hewlett and Hamman have each reported four cases and Perry one. The cases, as well as their outcome, are so similar that certain points as to etiology, symptomatology and prognosis can be considered collectively.

Zahn, in 1891, published the first thorough study of the causes for pleural rupture where there was no inflammatory process discernible, and describes four different modes:

(1) The rupture of vesicular blebs. These may be as large as hens' eggs, and are found in pulmonary emphysema. Because of the occurrence of pneumothorax in the comparatively young, where emphysema does not usually exist, we must conclude that it does exist in small portions of some apparently healthy lungs without giving any symptoms;

\* Read before San Francisco County Medical Society, September 4, 1917.

(2) The rupture of interstitial emphysema blebs, in which the air enters the interstitial tissue and then reaches the pleural surface, where vesicles form and rupture. All such instances have been about pleural adhesions, which are probably the cause of such a condition;

(3) Direct tear of pleura by the tug on adhesions; and

(4) Senile atrophy of pleura. This is so uncommon that it may be disregarded, and (1) and (2) may be combined under the term of vesicular emphysematous blebs.

The tearing of a pleural adhesion is the most probable cause for the rupture and, if we consider this pleural involvement possibly the primary focus of a tuberculous process in the lung, as Gohn would have us believe, where there is no other discernible evidence of tuberculosis, then more of these cases really may be due to tuberculosis than is believed. If the original tuberculous infection was in the pleura, and became entirely healed at that point without draining into and involving the bronchial glands, the physical signs would be so small that they could not be detected, and the area might be so minute that it would not appear in the x-ray. In tuberculosis, where the condition of pneumothorax occurs in about 1% of the cases, the rupture can be explained by a diseased condition near the periphery of the lung, where possibly there are adhesions and, when just the right amount of pressure is put upon this area, there is a rupture.

Next, may we consider the events generally just preceding the pneumothorax in apparently healthy individuals? It more often occurs after strenuous exertion, such as a hard day's work, or occasionally after a sneeze, hard cough, or sudden deep inspiration, which might follow the shock of a cold shower bath. Several of the cases in the literature have occurred during sleep. In one of the cases, which I will speak of later, that of a new-born babe, the pneumothorax was produced by the initial cry; in another, a boy of four years, it had a very gradual onset before admission to the hospital. In a patient with pneumoconiosis it followed a hard day's work.

When the lung suddenly collapses there is naturally always dyspnea, which becomes marked on exertion. There is somewhat more rapid pulse, and varying degrees of shock in the severe cases. If the patient is put to bed and given absolute rest, most of these symptoms subside in one, three or four days. On physical examination, the affected side is generally slightly enlarged, due to the increased intrathoracic pressure. If the collapse is only partial, this may not be evident. As is frequently the case, the collapse is not complete, and it occurs gradually. This can be explained by the fact that the tear is only a small one and, as the lung decreases in size, the aperture closes of itself. It is not uncommon to find a dulness, spoken of

as "wooden," over the affected side, although tympany would be expected. This dulness is probably due to the compression of the air in the pleural cavity. There is always diminished breathing over a part or the whole of this chest, with some exaggeration on the opposite side. The heart may or may not be displaced; it most often is, especially where there is any considerable amount of air. It is not always possible to hear a coin sound, or the so-called metallic tinkles, which are caused by bubbles of air in the compressed pocket of air (pneumothorax). There is generally hyper-resonance, or dulness, to a lower level on the affected side, and it does not move with respiration. The history of sudden dyspnea, or its gradual onset within a few hours, in an apparently healthy person, who shows either a wooden tympany or hyper-resonance over one chest, with diminished or absent breath sounds, should be sufficient to make the diagnosis of pneumothorax. From the physical signs fluid might be suspected, but the symptoms are not those of fluid.

The treatment for this condition is absolute rest, and this is generally sufficient. If the symptoms are severe, aspiration may be tried, but not until after a day or two, when the rent in the visceral pleura shall have healed. In most of these cases the air is fairly rapidly absorbed, and they are apparently in good health in four to eight weeks. The ultimate prognosis is also good; practically 100% of the 90 cases recovered, although a few had recurrence of the pneumothorax, and at least one had it on the opposite side. It is also very rare for fluid to form in these cases. I see no reason why such a patient may not have a recurrence of the pneumothorax, because adhesions will again be formed at the site of the tear. This should cause a guarded prognosis and advice as to avoiding severe and sudden exertion.

Just a word as to the tuberculous cases: It frequently occurs without any severe exertion; it often is not complete because of adhesions, and it is generally fatal, due possibly to some disease on the other side or to their depleted physical condition, or because the tear is larger and fails to heal quickly and the lung to re-expand. In those cases which live, fluid practically always accumulates.

Let me conclude by presenting three short histories with their x-ray pictures, and then by demonstrating a case of natural pneumothorax in a man with tuberculosis.

CASE 1. A. B., 41 years old; miner; patient of Dr. Boardman. Complaint, shortness of breath—20 days.

*Family History.*—Negative.

*Previous History.*—Never sick; no frequent colds.

*Occupation.*—Dry-drilling in a gold mine for eleven years, with the exception of 1½ years.

*Present Illness.*—For past few months patient has had some cough and expectoration, which has been dark and filled with dust. About two months

ago noticed some shortness of breath on exertion. This persisted, but did not interfere with work until twenty days ago, when, at quitting time, after a full day's work, felt weak and so short of breath that he could not walk fifteen feet without rest. This marked shortness of breath lasted only two or three days, accompanied by cough and expectoration. He had no fever, and otherwise was well. After three days he could walk about and dyspnea gradually decreased. At present he has a slight cough and expectoration. He has lost ten pounds in weight, appetite and sleep good; no fever, sweat, or bloody expectoration. Physical examination shows the left side more prominent than the right; motion equal on both sides; hyper-resonance over the left anteriorly and tympanitic posteriorly down to the spine of the scapula. The right side is slightly dull; the heart is displaced to the right. Modified bronchial breathing with a few dry musical râles on the right. On the left the sounds are distant. Whispered fremitus absent over the left upper lobe. At the left base the breathing is bronchovesicular, no coin sound heard. X-ray diagnosis: pneumothorax on left, with pneumonocooniosis.

CASE 2. T. K., aged 4; patient of Dr. Ash. Entered hospital December 4, 1916.

*Previous History.*—Negative; chicken-pox. Development normal.

*Present Illness.*—Ten days ago child became irritable; had fever in the afternoon, and the local doctor said he had bronchitis. Vomited for the first three days; two days ago had profuse sweats. Examination showed hyper-resonance in the left axilla, with râles at both bases and large interscapular dulness. Two days later there was hyper-resonance over the left chest; breath sounds distant; dulness suggesting displacement of the heart to the right. Four days later the hyper-resonance had almost disappeared; there were still râles pretty much throughout the left side. On following day the râles were still heard at the left base and the right apex; temperature to about 99.6 every afternoon. X-ray showed pneumothorax left.

#### CASE OF NATURAL PNEUMOTHORAX IN TUBERCULAR CASE, WITH RECOVERY.

CASE 3.—M., a new-born child on the service of Dr. William Lucas, University of California Hospital.

This was the first child of an apparently healthy mother. At birth it was noticed that the child was cyanotic and uttered a very feeble cry. The breath sounds were harsh and high pitched on the left, and very much diminished on the right side of the chest. The next day its color was ashen gray; respirations increased, but the child was not markedly dyspneic. From this time on, it gradually improved, so that on the fourteenth day it was apparently well and was discharged. The x-ray pictures shown below were taken on the third, seventh, and fourteenth days. In Fig. 1 the heart is seen displaced to the left; the mediastinum is also displaced to the left; the left lung is somewhat compressed by the pressure of the heart, and the right pleural cavity does not contain inflated lung. If this represented a case of failure of the right lung to expand, we would expect the heart and mediastinum to be pushed to the right by the greater pressure on the

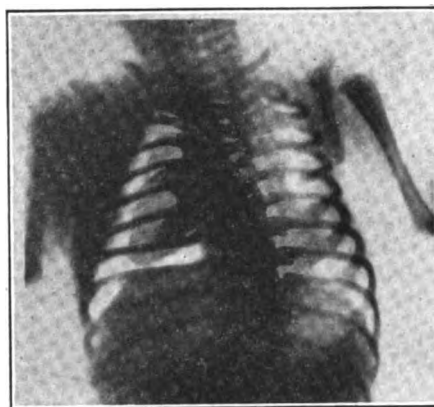


FIG. 1.—X-ray taken on third day, showing collapsed right lung and displacement of mediastinum to left.

left and the vacuum in the right pleural cavity. From this it seems very clear that there must have been a rupture of the right lung, and that its pleural space was filled with air under pressure. From the gradual expansion of the lung, as shown in Figs. 2 and 3, this theory is substantiated.

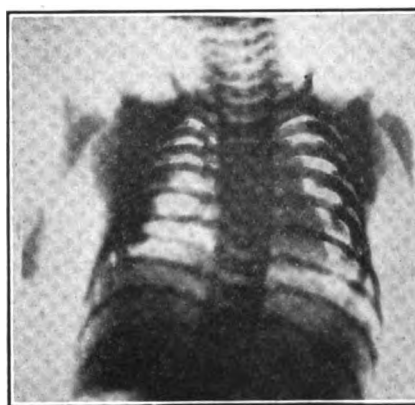


FIG. 2.—Seventh day. Right lung almost expanded. Mediastinum still slightly to left.

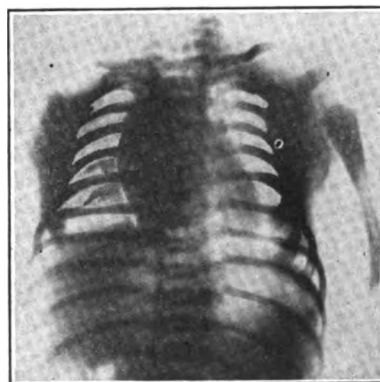


FIG. 3.—Fourteenth day. Mediastinum in normal position. Lungs normal.

CASE 4.—V. M., 38; cook.

*Family History.*—One sister died of tuberculosis.

*Previous History.*—Negative except for frequent colds. Best weight, 157, three years ago; average, 138.

**Present Illness.**—Twelve years ago fatigue, loss of weight, slight cough and fever; put to bed and soon felt all right. Three years and seven months ago sudden onset of chill, fever, pain in the side, a "drunk feeling" and sweats at night. He kept working, although one doctor said there was a suspicion of tuberculosis. Three weeks later his sputum was positive. After two months of good treatment, cough almost disappeared and he gained 27 pounds in weight. His first x-ray was taken then, and showed involvement of left apex. Nine months later the same symptoms recurred, and in two months something inside his chest "broke" and he spit up considerable pus, which gave much relief. Then he had apparently perfect health. Thirty months ago recurrence of pain in the chest, cough, spasmodic hoarseness and asthma. Because of the physical signs, he was advised by one doctor to have an artificial pneumothorax. About one month later he suddenly had a "big cough, terrible pain in the chest, things seemed to turn upside down." He coughed up a wine-glass of pus and two glasses of pus a day for two weeks. This had a terrific odor, and was accompanied by high fever. At this time he noticed his heart was on the right side. Rather soon began to feel much better, but six weeks later had another severe attack of shortness of breath. As he recovered he felt water splashing around in his left chest, until eight months ago, at which time, a doctor who saw him said that his chest was full of fluid. When he came to me he complained of weakness on slight exertion, inability to bend over, a cough when he lay down. Physical examination showed the left side full of fluid, heart displaced to the right axilla, and a few transient râles in his right upper lobe. The fluid has gradually been withdrawn, which, with reaccumulated fluid, has amounted to over 11,000 cc. I have introduced air in this left pleural cavity until there is now practically no movement of this lung, which did begin to expand at the end of thoracentesis, two months ago, making the total time for which this lung was collapsed, eighteen months. His blood Wassermann was negative; his blood tubercular test was one plus, chest fluid tubercular test four plus. Chest fluid at first showed specific gravity of 1019, a few pus cells, no tubercular bacilli. About three months ago tubercular bacilli were found in his chest fluid, as well as in his sputum. The last fluid withdrawn was much more turbid, and of specific gravity 1021. He has had no fever.

## DISCUSSION.

**DR. H. D'ARCY POWER:** These cases are very interesting to me. I had no idea that the non-tubercular form was such a rarity. It happened to be my luck some few years ago to have a case which I think must be placed in this group. I have good reason to remember it, because it was a week after the fire, and there was no available aspirating apparatus. Everything had been burned up. The patient, a man about forty years of age, a farmer, was sent in from the Sierras, with the story that he had caught a cold and quite suddenly felt pain in his chest, with cough. The local practitioner could not make anything definite out of it, and sent him to me. I made an examination of the chest, and found very much the condition described here tonight—a localized pneumothorax. He had an area of absent respiratory sounds on

the right, and tympany, and quite distinct splashing. He was not coughing at the time, had no fever, and, except for a little pain, was practically symptomless. I borrowed a spinal injection needle from Dr. Evans, and with the aid of a Davidson syringe, a piece of glass tube and a bottle, made a very good aspiration apparatus. I got out quite a little air, under pressure at first, and then, I suppose, thirty or forty cc. of clear fluid. He made an uneventful recovery, and while I was unable to follow the case up, I heard from him five years afterward as without any tuberculosis or other symptoms.

I do not know what caused it. It has always been a puzzle to me, and that is the reason I mention it. I think probably if these cases were more carefully looked for, we should meet them oftener than we do. Among cases of, not spontaneous, but accidental pneumothorax, we probably have more than are generally reported. Some years ago, in Grass Valley, I was called in consultation to a child with double bronchial pneumonia. The doctor in charge got the idea that the child had fluid, and stuck in a large exploratory needle. Aid went in and the child went out. I have no doubt these things occur more often than we know. They are not likely to be reported.

**DR. RACHEL ASH:** I have seen two of the patients described by Dr. Pierson this evening. The case of the boy of four years was not as simple as it would appear. The child was exceedingly irritable, had severe spasms, Babinski, and various other phenomena pointing to an involvement of the central nervous system. He entered the Children's Hospital with the history of a recent bronchitis. On examination, posteriorly there was a tympanic area, and below this a definite dulness, which I took to be fluid. I inserted an intramuscular needle very carefully, and was surprised to see the piston forced back immediately, by what was evidently a gas under pressure. The next day, pneumothorax was confirmed by the x-ray. I felt that possibly there might have been some adhesions between the parietal and visceral pleura, and that I had punctured the lung. I was much relieved to find that the pneumothorax had no apparent etiology, and that Dr. Bryan had found in the roentgenogram secondary tuberculosis and bronchial adenitis. I was never able to find the cause of the various nervous phenomena. We know nothing of the later history of the child, but he was in good health and running about before he left the hospital.

The other child was born at the U. C. Hospital. Our attention was first called to the patient by the severe cyanosis. One side of the chest was practically immobile; the x-ray made the diagnosis absolute. This child's chest also cleared up. The question there, of course, was whether there was a true congenital atelectasis, the lung having never expanded, or whether there was a rupture of the lung with the first cry. Unfortunately, no pleural puncture was made, to establish the presence or absence of air. There was apparently no pleural effusion in either case.

**MAJOR E. S. KILGORE:** Dr. Pierson's last case illustrated well the enormous capacity of the lung to expand after being contracted very much for a long time. This was impressed upon me very forcibly some years ago in connection with a



somewhat similar case. A young man, about twenty-four, complained of shortness of breath, amounting to disability. This was the only symptom he had had for about a year. From the history we felt sure his pneumothorax, which was a right-sided one, had existed about a year. X-ray showed the lung contracted to about the size of one's fist. The intrathoracic pressure was measured, and instead of positive pressure, which is the rule in early cases, he had negative pressure; so that, presumably, air had been absorbed as much as possible, and the condition was stationary. Attempt to withdraw any considerable amount of air failed. A surgical consultant, who was particularly interested in chest surgery, felt that several of the patient's ribs ought to come off in order to strip off the fibrous tissue and allow the lung to expand. The internists, however, decided to try more aspiration, in small amounts, and small amounts of air were taken out every other day for a considerable period of time. In the course of a few weeks, the lung completely expanded, x-ray showed a normal chest, and instead of being short of breath, he could run around the block as comfortably as a normal man, and a year later was in the same condition.

In regard to accidental pneumothorax resulting from chest puncture, the more dangerous cases are those *without* pleural adhesions. Fatalities have been reported following in a few hours after a needle has been stuck into a fairly normal lung. As there are no adhesions, the lung can contract easily and completely, and the sudden throwing out of so much lung space results in fatality. Pleural adhesions very much increase the chances of puncturing the lung, but, fortunately, they also prevent serious pneumothorax when such puncture occurs. Radiograms taken after ordinary chest punctures show minor degrees of pneumothorax oftener than we are in the habit of thinking.

DR. PIERSON (closing): Dr. Power's case is of interest, and I think would possibly come under the group of cases that are due to emphysematous blebs. It is very possible that this case had one of those blebs, which was ruptured by a little extra exertion.

I think I saw that case that Dr. Kilgore spoke of, and just after that I think he gave the man some blowing exercises which helped expand his lung.

A few nights ago, while I was thinking about this paper, I was called out at half-past eleven to see a tuberculosis case that had been doing very well. I mention this case because it shows how suddenly symptoms of this condition happen, and how unexpected it is. This man had been doing very well, had gained thirty pounds, had a good position, and was feeling so well that he bought a new suit of clothes to celebrate his birthday, which came this week. Saturday night at 8.30 he began to feel mean. At 9.30 he was short of breath. At 11.30 respirations 45, and cold sweat all over him, though no pain. The right chest moved less than the left, there was a dull tympany and very much diminished breathing on that side, and exaggerated breathing on the other side. The condition was severe, and the man died at 1.30 that night. I think that brings out the fact that in these cases that are tuberculous, the pneumothorax is almost always fatal, because there is probably a good-sized rent, and there is no chance for it to heal over and the lung to expand.

## OBSERVATIONS ON DISABLED SHOULDERS, WITH ESPECIAL REFERENCE TO SUB-ACROMIAL BURSITIS.\*

BY HILBERT F. DAY, M.D., BOSTON,

*Surgeon, Boston Dispensary; Associate in Surgery, Peter Bent Brigham Hospital; First Assistant Surgeon, Beth Israel Hospital.*

FOR the last four years I have been particularly interested in the cases of shoulder injury which I have seen at the Brigham Hospital, the Boston Dispensary and in private practice. As the subject has seemed to offer no definite "open and shut" means of making a diagnosis nor hard set rule for treatment, it has proved well worthy of careful study. Some of the facts which I have been able to learn may be of value to you who, perhaps, have not given much thought to them.

It may seem presumptuous for me to write a paper on this subject when we have in Boston another surgeon, namely, Dr. E. A. Codman, who is considered all over the country as an expert in shoulder injuries, and who has made an exhaustive study of them. Nevertheless, as none of his writings have been very recent, they may not have been brought directly to your attention. In elucidating the subject, therefore, I will not hesitate to use some of the facts he has worked out.

**Cause.** In practically all cases of shoulder disability, a history of trauma can be obtained. The order of frequency, as I have found it, is (a) direct fall on the point of the shoulder, (b) fall on the hand with strain transferred to the shoulder, (c) pull on the shoulder as by a sudden lurch of the body while hanging on a strap.

**Symptoms.** Generally there is at first soreness about the shoulder due to a definite contusion. This soreness may subside and then develop obstinate, persistent and often very acute *pain* in the shoulder. The pain is generally constant, but is sometimes intermittent, increased by motion of the arm, and is often worse at night. It is usually referred to the upper portion of the arm in the front and outer aspects, rather than posteriorly. This pain is sometimes described as running down the arm and forearm, or even up into the neck. The next most frequent and disabling symptom is *limitation of motion*, generally evidenced by loss of abduction—active abduction slightly less than passive—and accompanied by more pain. External and internal rotation (in reaching suspender buttons behind, the arm is internally rotated; and in reaching the back of the head with arm abducted, it is externally rotated) are also usually diminished as compared to normal. There is generally no deformity unless there is an unreduced dislocation, fracture or muscle atrophy due to long standing disuse.

In all cases of shoulder injury, an x-ray picture should be taken, for it frequently clears the

\*Read at a meeting of the Boston Chirurgical Society, Dec. 28, 1917.

diagnosis, as without it a small fracture about the shoulder joint may be overlooked. Most of the cases of shoulder injury that have come under my observation have been seen by me several days or weeks after the initial injury and, therefore, in this study we can disregard recent dislocations and very evident gross fractures. The diagnoses of injuries seen at later periods have in their frequency appeared in the following order:

1. Sub-acromial bursitis,
  - a. Without further injury,
  - b. With tear of the supraspinatus tendon,
  - c. With calcareous deposit.
2. Injury of the supraspinatus tendon alone.  
(It is probably caused by pressure of the sharp, under edge of the acromion on the tendon, made during sudden, violent motion of the arm).
3. Fracture of the greater tuberosity of the humerus.
4. Loose joint capsule causing some subluxation of the humerus.
5. Traumatic periostitis.
6. Disease of the head of the humerus, as syphilis, tuberculosis or neoplasm.
7. Brachial neuritis.

As the differential diagnosis may be easy or may be quite difficult, a few words of explanation about each of the foregoing injuries may be helpful.

1. As to the various types listed under sub-acromial bursitis, it is difficult to say at first whether the supraspinatus tendon is torn. If there are calcareous deposits, they will show in the radiograph.

2. I have seen no acute case where I could be sure that the supraspinatus tendon alone had been torn. In a general way there would be complete loss of abduction with very little tenderness and pain. In chronic or long standing cases, when the bursal inflammation has disappeared, a diagnosis can be made rather easily. It is done in the following manner: Have the patient stand with arms extended in abduction to the level of the shoulders and then have him counter-abduct against downward pressure made on his arms by the examiner. A defective supraspinatus tendon, although strong enough to abduct an arm alone, allows the arm to waver under the added weight.

3. A fracture in the shoulder joint should show up in an x-ray and, therefore, if taken at a proper angle, a fracture of the greater tuberosity of the humerus would show.

4. If there is subluxation of the humerus, there is generally a slight prominence of its head in front with depression behind and no flattening of the deltoid muscle. It is accompanied by pain radiating down the arm and inability to abduct. This is rarely seen, as the acute cases are so easily reduced; and this reduction is generally accomplished by a lay person before the patient reaches a doctor.

5. When there is periostitis, it is apt to be fairly well defined and is often accompanied by fever. As this disease progresses, there are changes in the bone which are demonstrable by the x-ray.

6. Such diseases as syphilis, tuberculosis and neoplasms of the bones about the shoulder joint are chiefly diagnosed with the help of the x-ray.

7. As to brachial neuritis, I have seen only one case which I was willing so to diagnose, and in that case there was tenderness above the shoulder in the neck, and in following the case, there was later some sensory disturbance in the arm. Cases where there has been an old neck injury, or where there is a slight chronic irritation of nerves in the neck are sometimes confused with cases of brachial neuritis, for they are apt to have occasional vague pains referred to the shoulder.

As the greatest number of cases of disabled shoulders are included under the subacromial bursitis group, I am going to confine my discussion to them.

*Anatomically* the subacromial bursa embraces what is often spoken of as the subdeltoid bursa. This latter division disappears when the arm is abducted and is simply that portion of the subacromial bursa which lies under the deltoid muscle beyond the acromion process when the arm is adducted. The bursa is  $2\frac{1}{2}$  to 3 inches in diameter. Its under surface is firmly attached to the tuberosity of the humerus and to the expansion of the supraspinatus tendon. Its upper surface is attached to the under surface of the acromion and coraco-acromial ligament, and to the under fibers of the deltoid muscle. From this description you may see that with the arm adducted the subdeltoid portion of the bursa is exposed to trauma. If this portion of the bursa is inflamed for any reason, it causes a mechanical obstacle to free abduction of the arm as it tries to slip under the acromion process. It is not generally realized that in extreme abduction it actually has to pass beneath the acromion ligament. Its function is to avoid friction at the time when the tuberosity of the humerus passes under the acromion ligament. When the supraspinatus tendon is injured or lacerated, full abduction is impossible, for it is the essential abductor of the shoulder. The deltoid muscle, as demonstrated by Codman, although popularly supposed to abduct, has its chief function as a means of holding the head of the humerus firmly under the acromion and in the glenoid cavity.

Acute, subacute and chronic cases have all come under my observation, and in certain individuals, where treatment has not been carried out properly, all three phases have been observed. In the *first type* pain is the outstanding complaint, abduction is limited by pain, and pain at night is particularly troublesome. There is also some effusion into the bursa, and the bursa is correspondingly tender to pressure. A

useful diagnostic sign of this stage and one which often surprises the patient is shown in the following way. Have the patient bend over and let his arms swing forward, then ask him to straighten up, holding his arms as they are. To his surprise he then finds he can fully abduct his affected arm without pain. This is due to the fact that the tuberosity has passed beneath the acromion. Of course the pain reappears when he lowers or adducts his arm. In the *second type*, because adhesions have then formed between the floor and roof of the bursa, the arm cannot even passively be fully abducted because the tuberosity of the humerus cannot pass beneath the acromion. This is demonstrated by showing that the scapula moves with the humerus in all its motions beyond a very few degrees of unrestricted abduction. In the *chronic type*, the adhesions having generally broken up, abduction is again possible but often painful, and sometimes jerky, due to the roughening of the bursa. Generally, the more the patient uses his arm, the more he has to suffer with pain in his shoulder, which often manifests itself some time after the actual motion.

Practically all cases of subacromial bursitis which have been under my observation long enough, have recovered despite treatment or the absence of it. The duration of symptoms seems to vary in untreated cases from six months to three years. A few cases who have been willing to carry out ideal treatment, have completely recovered in two weeks. I feel sure that proper treatment at any stage of the disease will often materially shorten its course.

Proper treatment, according to my observations, is as follows: The acute cases should be given aspirin for their pain and treated, as W. W. Brickner of New York suggests, by being put to bed "in a semi-recumbent position, supported on pillows not too soft. The affected arm is abducted on a pillow as far as it comfortably can be. A muslin bandage is then lightly looped about the wrist and carried to a convenient spot on the headpiece of the bed, where it is fastened.† The upper end of the bed is then raised on 'shock blocks' or chairs. As the patient's body little by little slides down in bed his arm travels (relatively) further and further up and thus a shoulder that obstinately resists forcible efforts at abduction yields steadily, painlessly, to this gradual countertraction, which the patient often does not even feel." This treatment has been successful in every acute case where I have used it, cures being accomplished in from five to twelve days. Aspiration of the bursa is said to be helpful when there is a large amount of effusion into it causing intense, constant pain. I have never myself used this treatment. In some acute cases where there has been a partial rup-

ture of the supraspinatus tendon, with an immediate operation, the tendon could be repaired and long weeks of disability saved. Also, as adhesions form in the bursa and there are often calcareous deposits in or below the bursa towards the end of the acute stage, these cases could well be treated by operation and so shorten convalescence. As I am advising operation for a certain number of patients, knowing it will give quick relief of symptoms, a *description of the operation* is not out of place.

The patient should lie on his side on a flat table. Local anesthesia with novocaine is perfectly satisfactory, but a general anesthetic is more often used, the forearm and upper arm wrapped separately, so that motion at the shoulder joint can be obtained during the operation. A two or three inch incision should be made from the acromion process down over the greater tuberosity of the humerus. The fibers of the deltoid muscle should next be separated by blunt dissection and retracted. When this is done the roof of the bursa will be exposed. Its roof can then be carefully incised for practically the entire length of the incision and its sides retracted so as to expose its interior. When this has been done, pulling downward on the arm will sometimes allow the bursa to fill with air and so make its cavity more easy to explore with a finger. Villous masses or adhesions can now be cut away. The floor of the bursa in acute cases may be found to be reddened and puffed up with a whitish center like a boil which, when incised, exudes a whitish material varying from a smooth fluid in these acute cases, to a thick, granular, sand-like substance in the older ones. This substance should all be scooped out, but not forcibly curetted. When this is done the floor of the bursa is retracted out of the way so that the tendon of the supraspinatus is brought in view. If there is a tear in it, it should be repaired. This can be done with vertically placed sutures, preferably chromicized catgut, though silk may be used. The wound may now be closed carefully in layers. The fibers of the deltoid fall together, but are best approximated by a couple of catgut sutures not placed deep enough to pierce the roof of the bursa. The arm is then put up in abduction, preferably in a plaster-of-paris spica. This plaster-of-paris spica, in my opinion, is not absolutely essential, for I feel that if the arm is held in abduction, as described above, it will do perfectly well, though perhaps a firm dressing for the few hours immediately following operation may make the patient more comfortable.

The subacute cases, namely, those where adhesions have formed, require more ingenuity and patience in their treatment. Generally speaking, they may be handled in three different ways.

a. By an operation (such as has just been described) with the object of separating adhesions and, if necessary, removing the bursal floor.

† Since first drafting this paper I have accepted and used a modification suggested by Codman. He binds a splint to the back of the forearm, extending from the hand to the elbow, and runs cords from either end of it to the head of the bed. By this means a distribution of traction takes the place of a pull on the wrist. The cords are so arranged that they can run along the top of the bed and give the arm a little play.

b. By forcible breaking up of adhesions with manipulations, the patient being anesthetized.

c. By gradual stretching, as is accomplished by nature without treatment, or more rapid gradual stretching by massage, passive motion, Zander treatment or active exercises.

The treatment of *chronic* cases, namely, those cases where the adhesions have been broken up and where motion is possible but perhaps painful, generally needs patience and considerable time. Patients of this type should have baking and massage at regular intervals, generally every other day, and should be given definite exercises to follow up by themselves. These exercises should be graded according to the amount of reaction they set up, and are best taken at night when they may be followed by a period of rest. One of the best preliminary exercises is to have the patient put his hand on a wall and slowly abduct the arm, creeping up the wall with his fingers. In this way his arm will receive some support and the abduction is accomplished gradually.

In all cases, as a routine procedure, the teeth, tonsils, gastro-enteric tract and in fact any possible focus of infection must be eliminated. It is not my belief that subacromial bursitis can be caused by infection. Trauma is essential. However, I do believe that, given an injured bursa, secondary infection may keep up its inflammation.

#### CONCLUSIONS.

Subacromial bursitis is a definite demonstrable disease and has certain characteristic symptoms. Its prognosis is ultimately good. Its cure can be hastened by proper treatment.

In the Peter Bent Brigham Hospital Out-door Department, I have observed and tabulated 64 cases diagnosed as subacromial bursitis during the years 1915, 1916, and nine months of 1917. More of these cases have been seen in the last year and a half, due to the increased size of the clinic. Of these there were thirty-two males and thirty-two females. The ages varied from a child of ten years to a woman of sixty-five, and apparently age has no particular significance except that the younger cases seem to recover from symptoms more rapidly than the older ones. Occupation, also, seems to be an unimportant factor, for in this series there were clerks, nurses, students, teachers and laborers. In a general way, the more highly educated the patients, the quicker they get well because they are more persistent in following treatment. Causes given by them for their disability are as follows:

Direct trauma,	29 cases
Indirect trauma,	6 " (as by falling on the hand or elbow).
Unusual use of arm,	10 "
Unknown,	19 "

At the time of their first visits to the hospital, these cases fell into the following divisions:

Acute,	26,
Subacute,	25,
Chronic,	13.

The cases made visits ranging from one to sixty per patient. In a general way, the acute cases made only a few visits and the chronic cases made many. One or more forms of treatment, as outlined in the foregoing paper, have been tried with each case. Six cases have been mobilized under an anesthetic, three have been operated and three others have refused to submit to the operation advised.

#### THE RED STREAK: A SIGN OF DISEASE.

BY EDWARD A. TRACY, M.D., BOSTON.

In the JOURNAL of December 6, 1917, was published, "A Method of Testing the Vasomotor Reflexes of the Skin." By using the method therein described in the investigation of conditions both of health and disease, it was found that in a large number of disease conditions the reflex vasodilation—or better termed, "the reflex diastole"—of the peripheral vessels of the face, was notably lengthened in duration. The normal reflex diastole was found in that location not to exceed fourteen seconds—the stimuli evoking the reflex being a stroke of a smoothened wooden tongue depressor applied with a pressure approximating two and a half ounces.

When the reflex diastole lasted more than fourteen seconds, invariably in non-medicated cases, a diseased bodily condition was found present.

This abnormal reflex diastole may be graphically termed the "red streak." The red streak is defined, therefore, as the reflex diastole lasting over fourteen seconds, evoked by stroking the face with a suitable instrument, such as a smooth wooden tongue depressor, with a pressure approximating two and a half ounces. Preferably, a cheek is stroked, otherwise the forehead. As before stated, when present in non-medicated cases, invariably a diseased bodily condition was also present. The red streak may be taken, therefore, as a sign of disease. This view is based upon a study of 392 cases in which the red streak was found present. In 388 of these cases the diseased bodily conditions named in Tables I and II were found. In four cases, a mild hyperthyroidism was believed present from the symptoms, but with no facilities to test the metabolism in these cases, the diagnosis remains unconfirmed.

In 310 of the cases—79% of them—a purulent condition in some part of the body was found; the remaining 82 cases being non-purulent disease conditions of the body. For this reason, in non-medicated cases, when the red streak is constantly present when tested for, the first thought is of pus. If thorough search excludes a pus focus, there is present infection, or

a disturbance within the domain of endocrinology—a disturbance in the balance of the internal secretions—and manifested by lymphatism, hyperthyroidism, hyperplastic thymus, diabetes mellitus, etc. (See tabulation of cases with the red streak associated with non-purulent disease conditions.)

The relation of the red streak to the thyroid secretion has been shown in cases of mild myxedema, in which the normal reflex diastole of the face to stroking was absent. In these cases, on administering to them thyroid extract, the red streak appeared. Digitalis medication can also lengthen the normal reflex diastole of the peripheral blood vessels, and so give the red streak; likewise, pilocarpin.

Functional heart cases—so-called nervous heart—is found associated with the red streak. Twelve cases were met with and tested. All gave the red streak. In four of these cases, the phenomenon of partial fading and intensifying of the streak, i.e., active systole and diastole of the peripheral vessels, was visible.\* This phenomenon, so far as I am aware, has not been observed before; at least I have met with no account of it in the literature. In one case in which this phenomenon was noted, at the same time there was present reduplication of heart sounds and irregularly acting heart. Some weeks after, on examining this case again, the red streak was found present, but the active systole and diastole of the vessels forming it were absent. The irregular action of the heart, noted before, was also absent.

A practical illustration of the value of the red streak in diagnosis is furnished in focal infection. In several cases of apical abscesses, a positive diagnosis was made from the presence of the red streak associated with slight tenderness to pressure over the root that had at a previous period been opened and treated. The diagnosis in these cases of apical abscess was confirmed by radiograph or by evidence furnished on root extraction.

In this brief paper no attempt is made to treat of the causation of the red streak. While such an essay might interest students of vegetative neurology, it would add nothing to the clinically determined fact that the red streak is a sign of disease.

TABLE I.

## PURULENT DISEASE CONDITIONS FOUND ASSOCIATED WITH THE RED STREAK.

1. Purulent gingivitis (accompanying dental caries) .....	192 cases
2. Purulent gingivitis and acne .....	1 case
3. " " and hypertrophied tonsils .....	35 cases
4. Purulent gingivitis and mumps .....	1 case
5. " " and purulent anterior nares and adenoids .....	1 case

\* The phenomenon of active systole and diastole of peripheral vessels as a reflex to stroking the face, was observed, also, by school nurses Edith W. Sheehan and Emily A. Snow.

6. Purulent gingivitis and eczema .....	3 cases
7. " " and impetigo .....	1 case
8. " " and cervical adenitis .....	1 case
9. Purulent gingivitis and functional heart trouble .....	1 case
10. Purulent gingivitis and herpes simplex .....	1 case
11. " " and otitis media chronica .....	1 case
12. Purulent gingivitis and purulent posterior nares .....	1 case
13. Pyorrhea dentalis .....	18 cases
14. " " and asthma .....	1 case
15. Alveolar abscess .....	3 cases
16. " " and pyorrhea dentalis .....	1 case
17. Purulent anterior nares .....	6 cases
18. " " and purulent gingivitis .....	1 case
19. Purulent posterior nares and hypertrophied tongue papillae .....	1 case
20. Otitis media chronica .....	4 cases
21. Furunculosis .....	10 cases
22. Stye .....	9 cases
23. Skin ulceration .....	5 cases
24. Skin ulceration and hypertrophied tonsils .....	2 cases
25. Impetigo .....	2 cases
26. Ulcer and eczema .....	1 case
27. Acute tonsillitis .....	3 cases
28. Acute cervical adenitis .....	1 case
29. Acute sublingual adenitis .....	2 cases
30. Acute occipital adenitis .....	1 case
31. Chronic blepharitis .....	1 case
32. Infective arthritis with pus in urine .....	1 case
33. Suppurating mastoiditis .....	1 case
34. Phthisis pulmonalis .....	1 case
35. Cerebral meningitis .....	1 case

TABLE II.

## NON-PURULENT DISEASE CONDITIONS FOUND ASSOCIATED WITH THE RED STREAK.

1. Hypertrophy of the tonsils .....	26 cases
2. Hypertrophy of the tonsils and cervical adenitis .....	1 case
3. Hypertrophy of the tonsils and cervical and axillary adenitis .....	1 case
4. Hypertrophied tonsils and hypertrophied tongue papillae .....	11 cases
5. Hypertrophied tonsils and hypertrophied tongue papillae and cervical adenitis .....	1 case
6. Hypertrophied tonsils and adenoids ..	2 cases
7. Cervical adenitis (chronic) .....	2 cases
8. Cervical adenitis and hypertrophied tonsils and hyperplastic pharyngitis ..	1 case
9. Cervical adenitis and hypertrophied tongue papillae and hyperplastic pharyngitis .....	1 case
10. Cervical and axillary adenitis .....	1 case
11. Hypertrophied tongue papillae (hypertrophied tonsils excised 2 years before) .....	1 case
12. Mumps and hypertrophied tongue papillae .....	1 case
13. Mumps—4th day after onset .....	1 case
14. Mumps—8th day after onset .....	1 case
15. Mumps 12 days after onset, and axillary adenitis .....	1 case
16. Functional heart trouble .....	12 cases
17. Eczema .....	8 cases
18. Hyperthyroidism .....	5 cases
19. Hyperplastic thymus .....	1 case
20. Diabetes mellitus .....	2 cases
21. Syphilis—3d day of chancre .....	1 case
22. Syphilis—3d month of disease, untreated .....	1 case

## WELFARE INSURANCE AND THE FACTORY.

By J. F. CURRAN, M.D., WORCESTER, MASS.

At the present time there is much discussion of welfare insurance, or, as it is more commonly called, health insurance. The plan, as proposed, is that the State bear two-fifths of the cost of maintenance, the factory two-fifths and labor one-fifth.

Erroneous conclusions have been arrived at regarding the value of health insurance, due to a misconception of the true meaning of insurance. First of all, insurance does not imply prevention. Many of the enthusiastic supporters of social insurance plans have claimed that compulsory health insurance will prevent sickness. Let us remember that insurance is not prevention, but that it is indemnity for loss. Health insurance is proposed as a means to replace the wages which are lost by illness. To devise the methods by which funds could be collected and payments made would be a comparatively simple task. All that is necessary would be to collect the required data and prepare a table of rates. But there are other more important phases of this question which must necessarily be considered.

The medical profession is concerned in this, since it must decide whether the claimant is entitled to compensation or not. A difficulty will arise when the physician is called upon to make this decision; also, when he attempts to give medical attendance.

Are we to have salaried physicians, such as a board like the medical corps of the army and navy, who will give their whole time to insurance work, or are we to have individual physicians with their fees? This is a question, the decision of which must be left to the medical profession. It cannot be fixed either by the State, corporations, or a group of individuals.

In Germany, where such a plan has been tried, physicians have refused to give treatments. This has cost the German nation hundreds of thousands of dollars, and there has not been any decrease in the number of accidents or in the number of cases of illness.

In Ohio, social insurance has not been a success. The rates per \$100 of payroll have increased alarmingly without any progress being made in prevention measures.

Social insurance has one advantage for the worker—it partially replaces the wages he loses by reason of his not being able to work during a period of sickness. Under the proposed working plans there are no discernible advantages to the employer.

Its disadvantages, however, are manifold. Social insurance means that individuals will lose a share of their independence. It will be a boon to the loafer and industrial hobo.

The whole scheme, as it has been outlined, is not far-reaching enough. For example, there is no provision made for the men who are self-

employed, such as the farmer, the news vender, and many others. It taxes the healthy man and the mental and physical defective at the same rate, and for that reason alone it is unjust. The victim of alcohol pays no more than the normal man, but he receives larger benefits. Again, the clean-living man pays for the support of his fellow workman incapacitated by venereal disease, or its after-effects.

The labor leaders tell us that the average workman complains bitterly of the conditions under which he works; but let us provide him with social insurance of about \$10 a week while ill, and he is perfectly satisfied to work under the same conditions. This would be a backward step for preventive medicine. It does not seek to remove the causes for illness and accidents.

Many of the proponents of this type of insurance fail to realize that it does not exact anything more from the employer than the payment of his share of maintenance.

Moreover, it might directly prevent many employers from taking the necessary steps toward making their factories hygienic and healthful. If the employer merely has to pay his share, naturally he will do no more than the law specifically requires. This is manifested in the attitude the manufacturer takes toward accident insurance. He pays his premium and lets the matter end there. If, however, the number of accidents reduces his production and causes an increase in his labor turnover, then he does what he can to prevent accidents. Sickness decreases production and increases labor turnover, so we may be justified in thinking that the employer will take an active interest in any plan that will prevent sickness.

Convincing the employer and enlisting his aid are not sufficient. We must have the coöperation of the employee. He must do his share in the line of preventive measures.

This, then, is our problem. In my opinion the time for social insurance is not opportune. What we need is a widespread campaign to bring about preventive measures relating to sickness and accidents and to introduce the practice of surgery in the factory.

Every factory should have a hospital and it should be conducted by a trained industrial surgeon. It is true that the cost of maintenance is great, but the hospital shortly proves its worth.

For concerns who do not feel that they can afford a dispensary, I have this plan to suggest. Let two or three small concerns within easy reach of each other club together to maintain a small hospital in each factory. They could secure the services of a full-time nurse for each, and one surgeon, who would spend a stated number of hours at each factory daily. The next step would be to introduce the following requirements:

1. To make physical examination of all prospective employees and re-examine all physically defective employees, and to advise corrective measures.

2. To treat accidents immediately after they occur and to give subsequent treatment.

3. To make examinations and give advice in cases of sickness.

4. To formulate and control sanitation measures throughout the works.

5. To promote health education among employees.

Physical examinations are necessary in order that men may be recommended for work best suited to their physical condition, so that a minimum amount of lost time, due to sickness, will result. Each man should be compelled to report to the hospital for treatment of accidents and minor illnesses.

If the man is so ill that he is unable to work, he should be permitted to choose his physician; but he should pay that fee himself. I favor this procedure for two reasons: the man in this case will be better satisfied because he feels that he has a doctor who is personally interested in his case, and it will gain for the industrial surgeon the coöperation of the general practitioner who is not actively engaged in industrial work. More than that, since the general practitioner is mainly dependent on the laboring man for his livelihood, he should retain this source of income. Under the panel system of social insurance this would not be permitted, and the physician will suffer greatly if the measure becomes effective.

In conclusion, I believe that preventive medicine, as a department of industrial hygiene, should receive more attention than it now does.

This, plus a better coöperation between employer and employee on those unfortunate cases which will always exist, can in a large measure correct the condition of the unfortunates in question.

State insurance in the form of law does not meet the situation. It has proven so in Germany and England, where it has been experimented with on a large scale.

I believe the final solution will lie in the industries themselves settling this question, as they have those of safety and prevention of accidents.

## THE CONTROL OF A SMALLPOX EPIDEMIC BY VACCINATION.

BY A. G. GOULD, PH.B., M.D., AKRON, OHIO.

DURING the summer of 1917, a few cases of smallpox developed in the factory of The Goodyear Tire & Rubber Co. These cases were nearly all of unknown origin and occurred mostly in the people who had come from the South, where vaccination laws are not so rigid as in the Northern states. None of these cases had ever had a successful vaccination.

During the autumn, cases broke out in the factory numerically as follows:

September .....	2
October .....	10
November .....	32

Few of these cases were seen prior to the onset of their eruption, and none were recognized as smallpox until the eruption appeared.

In view of the fact that cases were also present in Akron, and that new cases were developing rapidly, other than those in the Goodyear factory, and the pest house was very limited in size, it seemed advisable in November to prevent the further spread of the epidemic.

Inasmuch as all cases of smallpox in Akron had developed in those who had never been vaccinated with success, with one exception, and that in a man vaccinated forty years before, it seemed best to compel those in the factory who could not show scars of vaccinia or variola, to undergo vaccination.

Of the 15,000 employees of the company, this affected about 5,000. Many were vaccinated by local physicians. At the Goodyear Hospital, 1647 were vaccinated and all subsequent dressings were made there. There were no complications in those vaccinated at the Hospital, and no serious complications in any of the 5,000. The results follow:

Total vaccinations at Goodyear Hospital 1647	
Total vaccinations successful .....	1415
Total vaccinations result unknown, due to leaving employ .....	90
Percentage of known "takes" .....	85.9%

Much of the credit for the high percentage of "takes" must be given to the quality of the vaccine.

Ten of those whose vaccinations were unsuccessful had had smallpox, and one of those who left the company's employ had also had the disease.

The result of the vaccination programme manifested itself immediately. Three cases of varioloid developed in December, but there has been no case of true smallpox in the factory since.

So valuable did this work seem, we have made it a rule to vaccinate all new employees without good evidence of a former successful vaccination.

All of the cases of variola were mild and only one case required bed care, after the appearance of the rash.

### Conclusions:

(1) Smallpox occurs, almost without exception, only in those not protected by vaccination.

(2) Vaccination protects longer than the assigned seven years.

(3) Vaccination should not be followed by complications.

(4) Vaccination *en masse* controls smallpox.



## Clinical Department.

### PREOPERATIVE DIAGNOSIS BY ROENTGEN RAY OF HAIR CAST OF STOMACH.\*

BY FREDERICK W. O'BRIEN, M.D., BOSTON,

*Instructor in Roentgenology, Tufts College Medical School; Visiting Roentgenologist to the Cambridge Hospital, Mt. Auburn St., and Boston Consumption Hospital; Member of the American Roentgen Ray Society.*

BUTTERWORTH,<sup>1</sup> in August, 1909, reviewed at some length the literature and reported 42 cases of hair ball, in only five of which the correct diagnosis had been made before operation. Moore,<sup>2</sup> in 1914, was able to add eleven more from the literature which, with one of his own he reported at the time, brought the number of known cases up to 54; but he made no mention of the number diagnosed correctly, if any. Rudolph Matas of New Orleans,<sup>3</sup> later in that year made an exhaustive survey of the subject and was able to collect some 76 cases of gastrointestinal hair balls or casts. Indeed his paper, presented before the *Southern Surgical and Gynecological Association* at Asheville, December 15, 1914, not only is to date the most complete exposition of the particular subject at hand, but may well stand as a model for writers on medicine.

I have found but two other cases reported since that time, so that it is fair to conclude that this type of gastric foreign body is a rarity, but not so infrequent but that one should bear it in mind as something more than a possibility in gastro-intestinal diagnosis.

Matas laid stress upon the value of roentgen examination in reaching a diagnosis in these cases and reported eight correct diagnoses by means of preliminary x-ray examination. Thurston Holland of London,<sup>4</sup> was the first to publish the roentgenographic appearance of hair cast of the stomach. While in this case he had not made a positive diagnosis of the actual condition present before operation, his colleague Barclay had suggested it. Very shortly afterwards Holland<sup>5</sup> examined a similar case and was able to make a positive diagnosis by x-ray before operation. His description of his roentgen findings in this case are now somewhat of a classic.

The roentgen appearance of my own case reported here is quite distinct from that of Holland's, and while in the case in question I made a definite diagnosis of hair ball, it would not be fair so to conclude from its roentgen appearance alone. In fact, the roentgen evidence in itself only justified a diagnosis of intra-gastric tumor. Malignancy could not be ruled out absolutely by x-ray, but could rather definitely when considered in conjunction with the pa-

tient's history and other clinical data. Benign tumors of the stomach are rare, and while a lipomatous stomach wall might give us the appearance seen in our case by x-ray, the roentgenoscopic (fluoroscopic) examination made while the patient ingested the opaque meal, satisfied us that we were dealing with a foreign body.

The patient, Mrs. J. H., aged 29, was seen in consultation with Dr. H. H. Germain at the Cambridge City Hospital, November 5, 1917. Small of stature, well nourished and apparently of normal mentality, the patient presented objectively a palpable mass occupying the epigastrium, right upper and a portion of the right lower abdominal quadrants that seemed contiguous with the liver. Clinically it was thought the mass might be a new growth or cyst of the liver, involving the stomach.

The following history was elicited from the patient:

Occupation, housework; twenty-nine years old, married, white.

**Family History.** Father and mother living and well, six brothers living and well, seven brothers died when infants, causes unknown. No history of tuberculosis, cancer, syphilis, diabetes, Bright's disease.

**Past History.** Mumps, measles, whooping cough when young. Fractured wrist at the age of ten years. Scarlet fever at the age of twelve years. No diphtheria, no diabetes. Tonsillitis three or four times. Catamenia established at the age of eleven years, regular with a few pains, headaches, and has fainted twice. Eight years ago strangulated left ovary by carrying marble slabs. Since then has had considerable pain at menstrual periods. Denies venereal diseases. Married three years ago. Five weeks ago miscarriage of five months' duration, due to fall two days previous. Two years ago tonsillitis.

**Present illness.** Patient states that in October, 1916, she vomited three or four times a day, especially when drinking water. Could retain solid food all right. Continued to vomit for three or four times for some over three months, the vomitus being a light color and later became yellow, and patient still continued to vomit three or four times a day for nearly four months. Then she did not vomit at all for about one month. Then she began to have vomiting spells, vomitus being yellow in color. January, 1917, patient first noticed a lump in the region of the stomach which has continued to grow larger. Has had sharp, piercing pains at times and at other times would be dull. Pains were localized about the region of the stomach. Patient says she has lost twenty-five pounds weight between October, 1916, and January 1917. Has continued about same weight since. Has had good appetite, but ate small amount of food at a time and at frequent intervals. Patient when asked if she could in any way account for loss of hair from head says that her hair has been coming out some for over a year.

\* Read at the Mid-winter Meeting of Eastern Roentgenologists, Atlantic City, Jan. 4, 1918.

That she does not know of any sickness to cause same or other reason.

It should be noted in passing that in obtaining the patient's history the house officer had noticed the patient's thinness of hair, and the accustomed inquiry in regard to exposure to specific disease as well as laboratory tests were made, but no thought was given to the real cause.

The patient was given the usual contrast meal for x-ray examination and particular care given to the fluoroscopic evidence. The opaque meal was seen to trickle unevenly down and about some obstruction that occupied the major portion of the stomach, since only the stomach antrum and duodenum were seen to fill with the opaque meal which passed rapidly on into the small bowel. The pars cardia and pars media presented a cystic appearance due to the opaque medium passing between the stomach wall and the foreign body which was of uneven density.

The fluoroscopic image and that registered upon the photographic plate giving us the appearance as seen in Fig. 1. The intragastric



FIG. 1.—Roentgenographic appearance of author's hair cast of stomach.

character of the mass was readily determined, and by the use of the fluoroscope, it was seen to be freely movable and not connected with the liver. A positive diagnosis of hair ball of the stomach was made and on November 7th Dr. Germain removed a hair cast of the stomach (Fig. 2), weighing twenty-nine and one-half



FIG. 2.—Hair cast of stomach as removed at operation.

ounces, nine inches long, with a cardiac diameter of three inches, that occupied the entire stomach save for the antrum.

Even when confronted with the evidence, no admission of the hair-eating habit could be obtained from the patient, her husband or other relatives.

#### REFERENCES.

- <sup>1</sup> Butterworth: Jour. A. M. A., 1909, Vol. lili, p. 617.
- <sup>2</sup> Moore: BOSTON MEDICAL AND SURGICAL JOURNAL, 1914, Vol. clxx, p. 8.
- <sup>3</sup> Matas: Surg., Gyn. and Obst., Vol. xxi, p. 594.
- <sup>4</sup> Holland: Arch. Roent. Ray, July, 1913.
- <sup>5</sup> Holland: Arch. Roent. Ray, March, 1914.

#### Book Reviews.

*A Manual of Organic Materia Medica and Pharmacognosy, an Introduction to the Study of the Vegetable Kingdom and the Vegetable and Animal Drugs.* (With syllabus of inorganic remedial agents.) Comprising The Botanical and Physical Characteristics, Source, Constituents, Pharmacopeial Preparations, Insects Injurious to Drugs, and Pharmacal Botany. By LUCIUS E. SAYRE, B.S., Ph.M., Dean of the School of Pharmacy; Professor of Materia Medica

in the University of Kansas; Member of the Committee of Revision of the United States Pharmacopeia; Director of Drug Laboratory for State of Kansas. Fourth edition, revised. With 302 illustrations, the majority of which are from original drawings and photomicrographs. Philadelphia: P. Blakiston's Son and Company.

The author has prepared a book which does not differ very considerably from the other editions which have preceded it and which continues the merits and often the errors of the earlier editions. It confines itself, as the title indicates, almost entirely to a description of crude and prepared drugs, with but slight reference to their therapeutic action.

As a text-book for students of pharmacology, it is undoubtedly valuable, but for the physician it presents but little of interest. Some of the views of the therapeutic application of drugs are extremely vague, if not positively incorrect. For instance, on page four, the author in his description of acids, declares that, "When much diluted, they are administered for the purpose of checking hyperacidity of the stomach, by stimulating the production of the alkaline pancreatic juice and checking acid gastric juice." If this were true, then much of the modern investigation is futile.

It is unfortunate, too, that with drugs, first introduced under a fanciful name by the manufacturer, which have been later adopted by the pharmacopeia, with a name conveying some significance as to their composition, the old name is still employed. As an example of this custom, one need only mention the employment of the terms, "aristol," "aspirin," "dermatol," "diuretin," "salol," and "urotropin." It would seem that with the official adoption of these preparations, the older names might be left in abeyance.

The illustrations throughout the book are admirable and many of them original with the author.

There is a fairly good, though brief, description of serotherapy, in which a fairly critical statement of the therapeutic value of the different substances employed is given.

Chapter II includes reagents and processes which will be of value to those engaged in laboratory work, both on vegetable and animal products.

One is astounded at the vast number of drugs, many of which have, in later years, been pronounced worthless, included in this work.

*Diet for Children.* By LOUISE E. HOGAN (Mrs. John L. Hogan). A Complete System of Nursery Diet with Numerous Recipes; Also Many Menus for Young and Older School Children. A Home and School Guide for

Mothers, Teachers, Nurses and Physicians. Author of "How to Feed Children," "A Study of a Child," "The Introduction of Domestic Science in the Schools of New York City," U. S. Government Bulletin No. 56, "Timely Hints for Mothers and Nurses," "The Child in Sickness and Health," etc. 160 pp. Indianapolis: The Bobbs-Merrill Company, Publishers.

In this little book, Mrs. Hogan, who is well-known as an authority on the care and feeding of children, has covered the question of diet. In it she tells what foods to give children, and at what times; discusses pure food and its value, and gives a large number of recipes and menus. It is marked throughout by common sense, and should be of great assistance to mothers, nurses and all others who are concerned with the care of children. The point of view is, however, at times that of ten or more years ago rather than of today. In general, we agree with the diet which she recommends, but differ with her in certain respects. It seems to us, for example, that she is rather too much afraid to begin to give meat to children and that she is rather too partial to desserts and cream. These are minor matters, however, and, on the whole, there is little to criticise in the book.

*Principles of Diagnosis and Treatment in Heart Affections.* By SIR JAMES MACKENZIE. London: Oxford University Press.

The preface explains fully the purpose of this book of 250 pages. The contents were originally prepared as lectures for postgraduate students and workers in the cardiac department of the London Hospital. On account of the war, they were never delivered, but are now published in somewhat changed form. Sir James Mackenzie utilizes this opportunity to express his personal opinion in regard to many cardiac problems. The book is not a treatise or a text-book, nevertheless, the whole field of cardiac disease is covered fairly thoroughly. Sir James Mackenzie's work is too well known through his other publications to justify extended comment. In the book under discussion, one gets Mackenzie's personal viewpoint in regard to the significance, both present and future, of the information that is being so rapidly acquired by means of the various instruments of precision in cardiac disease. On this subject, Mackenzie, himself a pioneer and a considerable contributor, can justly speak with authority.

*Traumatic Pneumonia and Traumatic Tuberculosis.* By F. PARKES WEBER, M.A., M.D., F.R.C.P., Lond. London: Adlard and Son and West Newman.

This monograph, reprinted with additions from articles in the *London Clinical Journal* of

July, 1916, discusses the importance of the element of trauma as a factor in the cause of pneumonia and tuberculosis. The first part, devoted to traumatic or contusional pneumonia, reports several cases, and refers briefly to the literature of the subject. The second part treats at greater length of similar relations in tuberculosis. The idea is not new, but it has hardly been so extensively dealt with in previous publications. Logically, there seems little to contradict in the author's contention, and this monograph effectively emphasizes the clinical possibility.

*The Biology of Tumors.* By C. MANSELL MOUL-  
LIN, M.A., M.D., Oxon., F.R.C.S. London:  
H. K. Lewis & Company.

This monograph is an expansion of the Bradshaw Lecture delivered by the author before the Royal College of Surgeons in 1912. The proposed classification of tumors rests on their biological mode of origin. The first class is due to the sudden awakening of the innate reproductive power of tissues; the second class to failures of detail in carrying out the normal structures of the body. On this basis the author divides all tumors into two great groups, of which the former may be described as truly neoplastic, the latter as representing the limited group of fetal rests or embryonic inclusions. Most interesting is his discussion of conditions that lead to the production of gemmation tumors of the first class. Development or evolution, he believes to be the restraining influence against this process, an influence which may be broken down by adverse chemical or mechanical conditions. His classification is not classic and appears philosophical, rather than scientific. But where all theories are still largely hypothesis, it deserves attention on its own merits.

*The Year-Book of the Bureau of Preventable Diseases.* By JOHN S. BILLINGS, M.D. Department of Health of the City of New York. Monograph Series, No. 14.

The Department of Health of New York have superseded the publication of their yearly Handbook by this considerable monograph, which describes in detail the procedure of the Department of Health in the supervision of preventable diseases in New York City. It includes a statement of the organization of the department, and of the bureau of preventable diseases, the functions of the bureau, the sanitary code, that is, the authority under which the bureau operates, and its regulations. It gives in detail the rules and regulations of the bureau in its management of infectious diseases, with tuberculosis, including clinics and camps and all institutions for the care of tuberculates under the control of the bureau. The division of epidemiology, an outgrowth of the division of typhoid fever, covers diphtheria, scarlet fever, and such spor-

adic diseases as spinal meningitis and poliomyelitis. The division of venereal diseases, with a description of the management of animal diseases, and a description of the work of industrial hygiene, conclude the volume. As a complete and clear statement of the execution of sanitary supervision of a large city the book is valuable, not only to those coming in contact with the department, but to all who are concerned with public health administration.

*The Organism as a Whole.* By JACQUES LOEB, M.D., Ph.D., Sc.D. New York and London: G. P. Putnam's Sons.

In this volume, published in Putnam's science series, Dr. Loeb continues the development and exposition of the mechanistic conception of life and its phenomena, already made familiar through his previous works. In this exposition he correlates many of the facts hitherto observed and described separately, and presents a perspective view of the organism as a whole, tracing its career from the origin of life through the various stages of individual and generic development, through regeneration, adaptation and evolution, to death and dissolution. Of particular interest in view of Loeb's earlier work, are the chapters on fertilization, artificial parthenogenesis, the determination of sex, and the mechanism of Mendelian heredity. The book is well illustrated with fifty-one figures, including a few full-page plates. Whatever one's agreement or disagreement with the author, his monograph is of extreme interest as a contribution to the philosophy of science.

*Text-Book of Surgical Operations.* Illustrated by Clinical Observations, for Physicians and Students. By PROF. FEDOR KRAUSE, Privy Medical Councillor, Directing Physician Augusta Hospital, Berlin, in association with EMIL HEYMANN, M.D., Chief Physician, Augusta Hospital. Translated into English and Edited for American Readers, by ALBERT EHRENFRIED, A.B., M.D., F.A.C.S., First Assistant Visiting Surgeon, Boston City Hospital; Junior Assistant Surgeon, Children's Hospital; Surgeon, Boston Consumptives' Hospital. In six volumes, Volume II. With 373 illustrations in two or more colors. New York: Rebman Company.

The second of the six volumes of Krause's Surgical Operations contains about 700 pages, and is uniform in binding and general appearance with Volume I. It deals with operative surgery of the mouth, jaws, neck and brain. It is profusely illustrated with 300 cuts and more than as many colored plates.

It will be recalled that this large system of operative surgery is based upon the case method; a brief description of technic is outlined, and the precise procedure carried out in an actual case then follows in detail. While of course this cannot be done in every single instance, it is the plan upon which the whole work is based. The result is vivid and interesting, free from the ordinary machine-like dullness of many older treatises upon the subject.

Nothing has been spared to make the volume completely satisfactory.

*A Text-Book of Histology.* By FREDERICK R. BAILEY, A.M., M.D. Fifth Revised Edition. New York: William Wood & Co.

This fifth edition of a standard textbook of histology contains no important change in the original general plan and scope of the work. The text, however, has been thoroughly revised and some parts of it rewritten. Some figures have been added and the entire work is now profusely illustrated, with a well-selected series of three hundred and ninety-two text cuts, including one insert diagram illustrating the more important cerebellar connections. The chapter on the nervous system, rewritten for the third edition and revised for the fourth by Dr. Oliver F. Strong, deserves particular commendation. The work should continue to fill its useful place as a textbook for teachers and students.

*Wound Infections, and Some New Methods for the Study of the Various Factors Which Come into Consideration in their Treatment.* By COLONEL SIR ALBROTH E. WRIGHT, M.D., F.R.S., Consulting Physician to the Expeditionary Force. Being an address delivered before the Royal Society of Medicine, and taken from the research laboratory, attached to No. 13, General Hospital, Boulogne-sur-Mer. New York: William Wood & Company.

A small book of less than 100 pages. Wright considers, discusses and summarizes his views upon wound infections. It is, of course, an examination of the question of antiseptics as compared with physiological methods of dealing with wounds already infected. The question is, what shall we do when we are confronted by an existing inflammatory process? Wright believes in a 5% solution of common salt, with or without the addition of  $\frac{1}{2}$  per cent. of sodium citrate. "This brings into play osmotic forces, and 'draws' the lymph out of the walls of the wound by a *vis à fronte*. The sodium citrate is added with a view to decalcifying the outflowing lymph and rendering it incoagulable.

"It may perhaps be allowed to say with regard to this lymphagocic solution—or, rather, with regard to the simple 5 per cent. salt solution, which I find works in most cases equally—that

it has in this war proved itself pre-eminently useful. When brought into action upon a dry and infiltrated wound, or a wound that is foul and covered with slough, it resolves the induration, brings back moisture to the surfaces, and cleans up the wound in a way that no other agent does. Applied in gaseous gangrene in the form of a wet dressing to incisions which have been carried down into infected tissues, it causes lymph to pour out of the wounds, and arrests the spread of the infection. And, again, applied in gaseous gangrene to an amputated stump in cases where it has been necessary to leave infected tissues behind, it reverses the lymph-stream and draws out the infected lymph—saving life in almost desperate conditions."

Wright further adds that it has in this war proved itself pre-eminently useful. It has been asserted that antiseptics, at least in the present war, have been used by those in the field near the front, whereas the physiological methods and the non-use of antiseptics have been advocated from the laboratories; but it would seem from Wright's little book that there must be exceptions to this statement, and it is certainly most desirable that the use of so simple a method as a five per cent. common salt solution, with or without sodium citrate, should be thoroughly investigated in a dispassionate manner by a large number of competent surgeons under all conditions. It is hard to read Wright's statement without feeling that his arguments against antiseptics are very strong.

*A Laboratory Manual of Organic Chemistry for Medical Students.* By MATTHEWS STEEL, Ph.D. First Edition, First Thousand. New York: John Wiley & Sons. London: Chapman and Hall.

This monograph, originally compiled as a laboratory guide for medical students, constitutes a practical course in organic chemistry and aims, without burdening the student with a mass of unessential data, to supply the demand for a broader training than was formerly required in experimental chemistry. The text is conveniently grouped into seventeen chapters, and is divided continuously into two hundred and five numbered sections, each representing an experiment. Every right-hand page is left blank for laboratory notes. There are two appendices; the first contains tables of international atomic weight, specific gravity and percentage of alcohol and freezing mixtures of powdered ice and various salts. The second appendix contains a tabulated list of reagents and solutions. There are no text illustrations. Many of the data in the chapter on alkaloids were obtained from Autenrieth's "Detection of Poisons and Powerful Drugs." The manual should be of value to both students and teachers of organic chemistry.

*Habits that Handicap; The Menace of Opium, Alcohol and Tobacco, and the Remedy.* By CHARLES B. TOWNS. New York: The Century Company.

Every physician knows something of the grave dangers from the use of habit-forming drugs, particularly narcotics, and this book gives interesting points of view of this subject from a man who, though not a physician, has had unusual opportunities for informing himself. A person of this sort is sure to run to excess in statement, and this, too, is found in this book—as that in the introduction, that deprivation of the drug means death, and in statements such as that in the great hospitals in London, Paris, and Berlin, he found the physicians ignorant of how to treat cases of alcoholic mental disturbance. Of course, the weakest point of the book is the implied claim that the author's method of treatment of drug addictions is the best method known, if not the only effective one. The endorsement of this method of treatment in the preface by Dr. Richard C. Cabot; that it accomplishes the withdrawal of morphine with vastly less suffering than that entailed by any other treatment or method that he had ever seen, shows the lack of experience of a prominent physician in general practice with methods of treatment for a special condition, and should serve as a warning to others against hasty endorsement of man and methods in fields outside of their special study.

*A System for Case-Taking, with Explanatory Notes.* By GEORGE WILLIAM ROSS, M.A., M.B., Tor.; M.R.C.P., Lond.; and JULIAN LOUDON, B.A., M.B., M.R.C.S., Eng.; L.R.C.P., Lond. Canada: The Macmillan Company.

A brochure of seventy pages, containing a method of case-taking, has been made up by the above authors, and has been accepted for use by the Department of Medicine of the University of Toronto. It consists of nine headings: general registration, complaint, present illness, personal history, family history, initial observation, general examination, interrogation concerning special systems and investigation of special systems. The outline of procedure to be followed under each heading, with definite questions to be answered, is printed on the right-hand pages. On the left-hand pages are printed explanatory notes regarding different points of the examination, elucidating them, and emphasizing wherever necessary. As a comprehensive basis for careful and thorough case-taking, and as a guide for any physical examination, the book can be recommended.

*Diagnosis from Ocular Symptoms.* By MATTHIAS LANCTON FOSTER, M.D., F.A.C.S., Mem-

ber American Ophthal. Soc., etc. Rebman and Company.

In this book the author takes up leading symptoms and signs, and works from them to the diagnosis, collecting about the predominating feature all the minor ones that make up the picture of the disease. To do this well and to make such a work of value to the ophthalmologist is, as the author says, "a stupendous task," and we think he may well be proud of his success. The book must be read to be appreciated; no summary can show the industry and ability of the author, and we believe few will read without learning a good deal of value for daily practice. The book is printed in large type on mat surfaced but light paper, and its perusal gives pleasure to the eye as well as to the mind.

*The Secretion of Urine.* By A. R. CUSHNY, M.D., LL.D., F.R.S. New York and London: Longmans, Green and Company.

Hardly any member of the series of monographs on physiology which are gradually appearing under Professor Starling's editing will prove more valuable than this one upon the kidney. Even efforts to get reliable information through textbooks upon this organ are crowned with disappointment and confusion, but only those who have attempted to plunge into kidney literature can realize the mass of contradiction and worthless investigation which surrounds the subject. It is a great achievement, and one which could only have been accomplished by an investigator very prominent in kidney work, to have struggled through this mass of material, adequately separating wheat from chaff, and appending acute critical discussion to practically every phase of the subject.

A summary of the anatomy and histology of the kidney is followed by chapters which carry one through the kidney metabolism, theories of renal secretion, functions of the tubules and glomeruli, mechanical factors in secretion and chemical factors in secretion. Then follow chapters upon diuretics,—the action of which has been so indissolubly bound up with renal physiology, glycosuria, albuminuria, and notes on nephritis, and other renal disorders in their bearing upon the normal physiology of the organ.

If the reader has made no excursions into kidney literature, he will be apprised of the magnitude of Professor Cushny's task by the appended bibliography, which is carefully indexed for the text, and adds markedly to the value of the book. Indeed, one finds acute comment upon almost every one of these many references,—comments which cannot fail to save time and energy for every worker in the field. Well-chosen diagrams and tables illuminate a text which cannot be too highly commended.



# THE BOSTON Medical and Surgical Journal

Established in 1822

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, MARCH 21, 1918

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An editor will be in the editorial office daily, except Sunday, from twelve to one p.m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

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## THE CAUSES OF EYESTRAIN.

THE increase in the use of lenses among civilized peoples, because of visual defects or disturbances, has been variously ascribed to poorer visual development among the civilized, as against aboriginal peoples. This hypothesis has not, however, been substantiated by investigations into this matter. The apparently better vision of the aborigines is due to their ability to utilize the other senses and other aids in assisting them to interpret visual perceptions, rather than to any inherent visual superiority. That they are not sufferers from the many reflex effects of the use of the eyes—eyestrain—is because they are not called upon to use their eyes in the same manner or in the same degree that modern civilization and technical development demand. Very few eye defects give any trouble until the eyes are used for close or detailed application of a fatiguing character, or unless the illumination is poor, or badly directed or distributed,—whether natural or arti-

ficial. Even children with high visual defects are not likely to suffer the effects until they attempt the close application required of them at school. And in this respect it is the far-sighted or those with poor general or ocular musculature who suffer first and suffer most. The near-sighted are quite in their element in near work. They have the added advantage of magnification that their near-sighted eyes give them. Even with high degrees of myopia, it is remarkable how little discomfort they suffer and how well they can do work that requires close application. Of course, they suffer the embarrassment, rather than real inconvenience, of being unable to negotiate distant points. Near-sighted people suffer least from eyestrain. But even very mild degrees of hyperopia will often cause profound reflex disturbances, out of all proportion to the degree of the defect. It is for this reason that any case of hyperopia must be detected early and appropriate lenses applied. For high degrees of hyperopia, even correction is not remedial. Vocation must be chosen that close application of the eyes may be at a minimum.

The eyestrain due to muscular fatigue of the ocular muscles is more nearly a condition accompanying civilization than any other condition. Lack of muscular development, sometimes congenital, to be sure, but usually the result of sedentary life or occupation, leaves the ocular muscles underdeveloped and unable to maintain the muscular balance of the eyes or of the accommodative apparatus. Fatigue and all the reflex symptoms that go with it must be the natural result. The muscular cause of eyestrain can be distinctly limited by inculcating the necessity for proper physical exercise and physical development in the child, as well as in the adult. Perhaps the universal military training advocated at present will be the means of removing this one evil of civilized life—lack of muscular development. For eyestrain the result purely of muscular underdevelopment, neither lenses nor muscle treatment locally is of permanent benefit. Treatment must be general, looking toward an increase in the general tone of the body, and particularly of the muscles. Because so many of the neurasthenic symptoms are of reflex ocular origin, it would seem wise in making vocational placements, in the young particularly, to take into consideration the muscular and refractive conditions of the eye, in order that those unfitted for long-



continued near application of the eyes shall not be placed in unsuitable occupations.

But while these causes of eyestrain apply only to individuals with these developmental or muscular conditions, any one may have his eyes put under a strain by such extrinsic conditions as illumination. Numerous investigations into the lighting conditions of work and school-rooms have shown under what poor conditions of illumination most people work. Where the degree of illumination is adequate, the distribution and the protection of the light are still questions for consideration. Inadequate, ill distributed or unprotected illumination places an extra burden upon the visual integrity. Eyes become easily fatigued, reduce their efficiency and cause the many reflex symptoms of eyestrain. Probably the most harmful of the illumination defects is badly protected illumination. Illumination that glares directly into the eyes, without any protection, is most injurious. The source of light must always be protected against glare. It is the object of vision that needs illumination, rather than the eyes themselves. In the matter of the lighting of factories and public buildings of whatever character, the illuminating engineer is as important a factor in construction as the construction engineer. Proper direction, distribution and protection of the sources of light are, besides, matters of economy. Due regard for the location of desks, tables, machinery, etc., with regard to the source of light, will give the best and most economical consumption of light, and will avoid the baneful effects upon the eyes of bad illumination.

#### ANNUAL REPORT OF THE PHILIPPINE HEALTH SERVICE FOR 1916.

THE Philippine Health Service for 1916 presents a most favorable report. The routine work of the Service was carried on in a satisfactory manner, real interest and enthusiasm being manifested by the various officers and employees. With the exception of cholera, no epidemic diseases were present in serious form. Cholera was present throughout the year, but did not assume serious proportions until May, when, in spite of all efforts to control it, it began to make its appearance in various places. A total of 12,847 cases and 7986 deaths occurred in the Islands during the year. Of this total,

1214 cases and 513 deaths occurred in Manila, and 11,637 cases and 7473 deaths occurred in the various provinces. At the end of the year, Manila was almost entirely free from cholera, and only a few scattered cases existed in the provinces.

Extraordinary efforts were put forth to control the cholera epidemic, but as the situation became serious, all that could be done was to hold the disease down to a minimum and eradicate it as soon as possible. It was quite conclusively proved that the epidemic was spread by cholera carriers, and kept going by them. Record is now being kept of all persons who have recovered from cholera and are known carriers of the disease. These will be examined from time to time, to learn as far in advance as possible of an impending epidemic.

The work of the School of the Bureau of Science, and others, has demonstrated quite conclusively that when a cholera carrier is given a severe purge or when he ingests food or other substances which have the effect of producing a severe purge, the carrier frequently is converted into an actual case. The usual history of the first case of cholera in a community is as follows: No cholera has been present for months, perhaps. An individual, usually one of the very poor class, has gone to work or fishing early in the morning, and has been exposed to the rain and has been thoroughly wet all day; upon his return home, completely exhausted, soaked to the skin, and very hungry, he eats excessively of any food that happens to be in the house, as often as not rice and fish that very probably have been cooked in the morning and kept in a covered vessel all day; that night he has an attack of "cholera morbus," with vomiting and purging, cramps, etc., and the next day has cholera and probably dies; this is the usual focus from which the disease spreads throughout the town. Though not every person who has an experience similar to the above has cholera, it is believed that a large per cent. of the cholera carriers who have such an experience are likely to develop the disease.

At the time of the recent outbreak of cholera in Manila, it was discovered that an unusual quantity of shrimp and other small fish had appeared in the local market. These soon began to decompose, and the sanitary inspectors ordered their condemnation; the fish venders consequently lowered their prices to avoid loss, and large quantities were bought by the poorer class-

es; many fell ill of cholera, and the epidemic raged until the sale of shrimp and shell fish was prohibited. At once the disease abated.

Early in the outbreak it was decided to establish temporary emergency hospitals for cholera, as a means of removing cases of infection to a common center where they could be effectively controlled. There was some objection at first, as the people did not take kindly to hospitalization. After the successful treatment of several cases at Hagonoy, Bulacan, however, a voluntary influx of cases began, and as a result the epidemic was promptly controlled, with an average mortality of about 45%, as compared with 75-80% in previous outbreaks. Emergency hospitals sprang up wherever cholera appeared, with excellent results; the people were convinced, and voluntarily reported themselves or their sick, all over the Islands. In Manila, over 50% of all cases presented themselves.

Two sanitary commissions—all that the Service has been able to support—have made a study of conditions in ten towns of the Islands, and have learned many things concerning the mortality rate. As a direct result of their efforts, the people have learned that many diseases hitherto considered inevitable, are preventable and curable. Sanitary ordinances have been enacted and enforced, especially those regarding sewage and waste disposal. Over fifty women's clubs have been formed, dedicated to the prevention of infant mortality, to better housing for the people, and to the inculcation of better balanced diets. With this end in view, almost 15,000 families agreed to maintain vegetable gardens, with the idea of adding protein-producing vegetables to the almost universal diet, among the poorer classes, of rice and fish.

The researches of the sanitary commissions indicated early in their existence the necessity for a better house than the average Filipino now possesses. The average house now in use is made of nipa and bamboo, affords inadequate shelter from the elements, is too small for the average family, is a continual expense on account of its frail nature, and is perpetually in danger of destruction by fire, due to its tinder-like makeup. The problem has been studied, and the commission now issues a statement that it is possible to build a house that is sufficiently large for the average family, that is neat in appearance, durable, fireproof, and sanitary, for the average cost of about \$250 to \$300 U. S. currency. These houses are to be built of mate-

rials locally available, and on a very simple plan of construction.

Statistics show that there are about 4466 insane in the Islands, and of these, hardly 1000 are under proper restraint and care. The great majority are cases of the manic-depressive type of insanity, probably due to chronic intoxications resulting from chronic infections, as fevers, malaria, etc., and to prolonged and repeated food poisonings, due to improper and poorly balanced diets. When proper care and food are received, many recover.

The leper colony at Culion averages about 4300, and many improvements have been made there of late. The lepers are taking more interest in life than ever before, and the colony does much to care for itself. An ice plant has been constructed with leper capital, all the fish used are caught by the lepers, and almost all the vegetables used are raised by them. Practically the only articles sent to the colony now are clothing and rice; groceries are sent to the Culion store and sold to the lepers at cost.

There were few cases of actual smallpox during the year, but the number of cases of varioloid, practically without deaths, has increased. This is interpreted to mean that the immunity obtained by the general vaccination begun in 1905 and 1906 has begun to wane. Revaccination will be started at once, and it is hoped to establish immunity once more before that formerly gained is entirely lost.

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## THE SCOPE OF MENTAL HYGIENE.

It is a fallacy to view the subject of mental hygiene as a separate scientific entity distinct from general hygiene. It would, perhaps, be better to look upon mental hygiene as the initial and essential step toward general hygiene. Certainly it is the pivot around which all notions of hygiene must revolve. It is essentially necessary to understand and to carry out the principles of mental hygiene in order to develop the kind of mind that will be receptive to the dictates of general hygienic principles. With the development and the conservation of the mind, whether as a matter of course in evolution or as the result of positive effort in study and research, has come the eradication of diseases previously scourges of mankind, and which, undoubtedly, will be followed by still

further progress in this direction. But whether it is a question of progress in general or in mental hygiene, large results must come from the efforts of the entire community, rather than by individual effort.

The first necessity in mental hygiene, as in general hygiene, is the exclusion of foreign sources of mental disease and the isolation and segregation of those found in a given community. In a measure, even mental disease is "contagious" indirectly from the influence association with mental cases has on immature minds, but perhaps more directly by the tendency to transmit mental disease to the offspring. Moreover, there are certain diseases and conditions, almost entirely preventable, which seem to have a very marked tendency to produce mental disease in the person concerned and then in the offspring by hereditary transmission. In this respect, alcohol and syphilis are, of course, the most important factors. The prevention of alcoholism and syphilis would be the greatest factors in the promotion of mental hygiene and in the conservation of the mind. It is estimated that 70% of the mental conditions are hereditary in nature. This would seem to indicate that, in spite of the enormous number of insane and defective, very few of them are accidental infections, so to say, but are, most of them, due to bad ancestry.

Of those not traceable to heredity, the cause of the mental disturbance can be found in the lack of attention in the very young to such conditions as environment, food, exercise, preventable illness, etc.,—the same conditions, practically, that officiate in the causation of physical conditions. Besides, the impressionistic condition of early life makes it essential that only those ideas be allowed to appear before the child that will arouse healthful thoughts and actions. The depressing, the maudlin and the exciting must be religiously kept from the immature mind. Instead, their places must be taken up by healthful play, exercise, amusement, reading. The mind, as the body, must be carefully guarded from trauma of any kind. The mind must be exercised but not injured. When the child has a bad heredity these elements must receive especial attention in order to anticipate injury, just as a frail child must be more carefully guarded than the normal. Suitable occupation must be determined early, and proper vocational training given in order to prevent economic failure and the depressing effect it has

on the mind. Vocational guidance, based on mental and physical capacity and inclination should be the foundation of the future industrial life of the child. No opportunity must be overlooked to encourage and to educate the younger generation in wholesome interests and wholesome thoughts, and to discourage laziness, dreaming and introspection.

Much of the incidence of mental disease and defect can be reduced by proper education, even when the heredity of the individual is bad; more of it can be prevented by the eradication of preventable diseases and abuses, and much more by segregating and preventing marriage and propagation by defectives and those suffering from alcohol, syphilis, and like conditions, and finally by a more rigid exclusion of alien sources of disease, disease tendency, and inferiority.

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#### INDICATIONS FOR LOCAL ANESTHESIA.

As a general routine of operative clinics when there exists none of the accepted contraindications to general anesthesia, and where the operation is sufficiently major to warrant rendering the patient unconscious, general anesthesia must still remain the most feasible method. But while general anesthesia renders the patient unconscious and free from pain, it does not render the organism free from the shock to the nervous structures engendered directly by reason of the operative hurt to the tissues. The sensibility of the nervous system and its centers controlled, the production of shock is not avoided by rendering the patient unconscious with the general anesthetic. In reality, it is only with local anesthesia that these conditions may be anticipated. The Crile method of anoci-association is the outgrowth of this circumstance. Unless the seat of the operation, where the hurt is administered to the tissues and to the irritable nerves, can be freed from communication with the general nervous system for the period of the operation, shock and the other bad by-effects of the operation will continue in spite of the anesthesia, the anesthetic, or the quality of the anethetist. The injection of the local anesthetic into the site of the surgical hurt renders it impossible for the shock of the operation to be transmitted to the higher centers. When, then, the general anesthetic is administered, there is the advantage of unconsciousness together with the freedom of shock.

Moreover, it is quite well understood that, no matter what general anesthetic is administered, it is highly toxic to the organism. Many of the post-operative complications, such as albuminuria, acidosis, etc., are directly due to the anesthetic. Of course, some anesthetics are better than others. At best, there is only a choice between evils. One anesthetic may be contraindicated in some conditions and under certain circumstances, another in other conditions and circumstances, but all of them have distinct contraindications, often hard to determine. Such mechanical conditions as the presence of mucus, congestions, and such diseases as nephritis, diabetes, sepsis, suppurative thoracic conditions and the like all make the administration of a general anesthetic dangerous. Of course, there are untoward effects and dangers from the use of local anesthesia. Sudden death is not unknown. Yet local anesthesia is becoming more and more popular in major operations, and in operations where local anesthesia would never have been dreamed of only a short time ago. There is hardly any major operation which cannot be performed under local anesthesia. In minor operations there is hardly any excuse for rendering the patient unconscious and subject to all the after-effects, dangers and annoyances of a general anesthetic. Local anesthesia often has the peculiar anomaly that the administration of the local anesthetic is out of proportion in point of time to the operation itself. But this is not a valid objection against it. Local anesthesia will not overcome spasm of the abdominal muscles, nor can local anesthesia be administered in mutilating, violent injuries where rapid surgical measures of an emergency character are indicated. In the latter instance it was always understood that, no matter how much the patient was in collapse from the shock of the injury, the general anesthetic had a therapeutic effect in relieving the shock, in the same way that the methods of anoci-association would anticipate it in surgical operations. However, the added shock to the patient of the remedial surgery would tend to overcome any benefit that the general anesthetic would bring about; but in such cases there is no alternative but to give the general anesthetic and operate, regardless of the question of the anesthetic or the operative shock. Whatever the indications, however, children and very nervous individuals are not good subjects for local anesthesia.

## ANNUAL REPORT OF THE BOSTON MEDICAL LIBRARY.

THE Boston Medical Library has issued its forty-second annual report for the year of 1917. Several innovations have been made during the year. It has been voted that books shall not be reserved for a longer period than forty-eight hours; duplicate books and periodicals may be given in exchange to other libraries only for similar material needed by the library. It has been decided to keep the library open only three evenings a week, instead of five, and a further curtailment of service may be necessitated by the shortage of coal.

The Committee on Membership and Elections reported that the Library had gained 4 Fellows and 24 Associates, and had lost by death, resignation, and dropped from the rolls, 20 Fellows and 12 Associates, making a net loss of 4 members. The total membership on January 1, 1918, consisted of one Honorary Member, 11 Life Members, 464 Fellows, and 328 Associates, making a total of 804.

The Librarian states that very few new books and periodicals have been received from Europe since last year. Many of the subscription periodicals have been held up in Rotterdam, and there is some question of their being allowed to leave Holland until after the war. Several large collections of books and periodicals, principally in foreign languages and on subjects in which the library has been deficient, have been purchased in this country the past year; among them are books on the examination of food, beverages, and drugs, toxicology, handwriting of the insane, also some valuable monographs and sets of unusual journals. The large collection of autograph letters and autographs, which had not been looked over or put in order for years, has been arranged in chronological and alphabetical order, so that they are now readily accessible.

WAR RELIEF FUNDS.—On March 15 the totals of the principal New England war relief funds reached the following amounts:—

Halifax Fund .....	\$695,779.75
Belgian Fund .....	664,538.57
French Wounded Fund .....	328,566.94
Armenian-Syrian Fund .....	288,150.50
Jewish Fund .....	285,532.53
Italian Fund .....	151,021.64

## MEDICAL NOTES.

**AMERICAN POSTURE LEAGUE.**—At the annual meeting of the American Posture League, which occurred March 9, closing with a dinner for the Honorary Boards at the Aldine Club, the following officers were elected: Miss Jessie H. Bancroft, president; Captain Frederick R. Green, vice-president; Dr. Henry Ling Taylor, secretary; and Dr. Percy W. Roberts, treasurer.

The reports for the year showed a great activity in relation to war conditions, and a large demand on the resources of the American Posture League, as a national health organization, indicating a quickened public conscience on the subject of health since the physical examination for the draft Army.

The Technical Committees of the League reported completed work for the year on factory and school seats, shoes and other articles of clothing for men, women and children, besides a large educational service.

**SIXTH CONFERENCE OF INDUSTRIAL PHYSICIANS AND SURGEONS.**—The Department of Labor and Industry will hold its Sixth Conference of Industrial Physicians and Surgeons in the Hall of the House of Representatives at Harrisburg, on April 9, 1918.

The program to be presented is of exceptional interest and timeliness. At the morning session there will be brought up the subject of industrial health hazards arising out of the war emergency.

The afternoon session will be devoted entirely to the subject of workmen's compensation. The question of hernia in its relation to the compensation law will be gone into thoroughly, and the possibility of amendments to the present Pennsylvania Workmen's Compensation Law will be discussed.

Copies of the completed program may be obtained on request from Dr. Francis D. Patterson, Chief, Division of Industrial Hygiene and Engineering, Third and North Streets, Harrisburg, Pa.

**THE "QUADERNI D'ANATOMIA."**—The *Lancet* makes the following interesting statement about the "Quaderni d'Anatomia," by Leonardo da Vinci:

"The 'Quaderni d'Anatomia,' by Leonardo da Vinci, has had a fate stranger even than that

reserved for his other works. Written early in the sixteenth century, almost 300 years were to come and go before any serious reference was made to it, while another 100 years were to pass before it was published in an adequate or complete form. The interest of the work, which formed the subject of two recent Arris and Gale lectures by Professor William Wright, lies largely in the fact that it provides the spectacle of certainly one of the ablest and most versatile men who have ever lived, attempting the solution of some of the main problems of anatomy and physiology at a period when the systemic circulation, osmosis, oxygen, and the microscope were all unknown. In addition to these grave defects in his knowledge, Leonardo, like all his contemporaries, was further handicapped by the inheritance of two fundamental errors—viz., the belief that the arteries contained free air and that the interventricular septum of the heart was penetrated by narrow passages through which the blood passed from the right ventricle into the left. The nearest approach which Leonardo made to the elimination of the first of these errors was that he in one passage denied that free air entered the heart from the lungs, and wrote of the blood in the lungs being merely refreshed, thus returning to the correct Aristotelian view. Leonardo's main contributions, had the publication of his work not been delayed, would have included a more precise description of the interior of the heart and large vessels than had ever been supplied before, thanks, no doubt, to his skill in draughtsmanship, and a singularly correct account of the action of the thoracic and abdominal muscles in respiration. The book was intended as a textbook for students, and it is of interest to find how modern were his methods, as, for instance, the representation of opaque parts as transparent so that the relations of underlying structures may be observed, the pouring of wax into hollow viscera in order to obtain casts of their interior, the study of comparative anatomy, and in one instance, at least, the practice of vivisection. Although Leonardo's work cannot be said to have had any effect on the progress of anatomy, it must always remain an interesting contribution, while the question as to what its effect might have been can never be finally decided."

**THE USE OF HOG SERUM BY VETERINARIANS.**—Criticism of the State Department of Animal Industry was voiced at a recent hearing before the Legislative Committee on Agriculture, on a petition of Frank R. Austin of Lynn, that on application of any registered veterinarian, the department shall furnish him at cost with hog serum in such quantities as he may require for his practice. Mr. Austin charged that the State Department has a monopoly on the serum, that it sends its agents to treat diseased hogs, and that there are delays involved which often cause

serious losses to hog owners. Dr. John F. Winchester of Lawrence, Dr. William M. Simpson of Malden, and Dr. C. H. Playdon of Reading all argued that they should be allowed to apply the serum, and that the department ought not to stand in their way.

James E. Dodge, superintendent of the Hood farm in Lowell, led the opposition. He is a breeder of swine, and opposed allowing veterinarians the power to administer serum for hog cholera. Edward A. Cahill, of the Department of Animal Industry, declared the improper use of the serum to be the cause of the loss of hundreds of thousand of dollars among hogs in other States. He said that the average veterinarian was not competent to its use. He stated that out of 500 veterinarians in the State, only four have asked for the right to use the serum, and that not a single hog owner had asked that the right be given to veterinarians.

#### WAR NOTES.

AN APPEAL FOR ROEHAMPTON HOSPITAL.—Lieutenant-General Sir Francis Lloyd has requested that the following appeal for Roehampton Hospital be given publicity in the columns of the JOURNAL.

"In 1915 we made an appeal for funds to establish Queen Mary's Convalescent Auxiliary Hospitals at Roehampton for Sailors and Soldiers who had lost their limbs in the war. The response from all parts of the Empire was most gratifying, and with liberal grants made by the British Red Cross Society and the National Relief Fund, the Committee were able to establish the Hospitals on a sure foundation, and to extend vastly the original scheme by the erection of additional wards, training workshops, recreation rooms, factories for artificial limbs, etc.

The work at Roehampton is so widely known that it is unnecessary to describe it, but it may be mentioned that up to December 31 last over 11,500 officers and men (including a large number from our Overseas Dominions) have been admitted to the hospitals, supplied with artificial limbs (provided by the State) and taught how to use them; large numbers have also been admitted for readjustment and renewal of their limbs.

Twenty-three hundred men have been found good posts through the Employment Bureau attached to the hospitals, and 7000 men have been returned to their old employment or passed on to local committees with information necessary to secure them a fresh start in life.

The present accommodation is totally inadequate to meet the increasing demands made upon it, and serious consideration must now be given to the future.

The majority of our limbless men are quite young, cheery and full of hope about their future, but much depends upon the usefulness of their artificial limbs, which always require readjustment owing to the shrinking of the stump. Also at intervals repairs and new limbs are necessary. Consequently, there will be need of Roehampton for the next forty years.

Scotland, Ireland, and Wales have recognized this want, and by voluntary effort have established permanent fitting hospitals for dealing with the problem. It is felt that the need here has only to be known, and England will wish to do the same for her gallant men who are maimed for life.

A generous conditional offer has been made by the owner of Roehampton House, Mr. Kenneth Wilson, by which it is hoped that the house and grounds may be purchased and the great work continued there without interruption after the war, but if this is found to be impossible, funds will be available to purchase another suitable place.

We earnestly appeal for £100,000, not only to extend the present scheme but to found a permanent 'Roehampton,' where our men can always return to have their artificial limbs readjusted and renewed, and we feel sure that this appeal to make adequate provision in the future for the limbless men who have served their country by sea, land, and air will not be made in vain. No donation will be too small and none to large.

Cheques and postal orders should be addressed to the Hon. Treasurer, Queen Mary's Auxiliary Hospital, 12, Little College Street, Westminster, S.W., marked 'ROEHAMPTON,' and crossed Lloyds Bank, 222, Strand.

FRANCIS LLOYD,

*Lt.-Genl., Chairman,*

M. E. GWYNNE HOLFORD,

CHARLES H. KENDERDINE,

*Hon. Treasurer,*

KATHLEEN FALMOUTH."

EXPLOSIVE ACTION OF BULLETS.—Herman Küttner (*Muench. med. Woch.*, August 14, 1917, abstracted in a recent issue of the *Lancet*), consulting surgeon in the German navy, has drawn attention to the fact that the explosive action of projectiles in the body is not confined to the rifle bullet. This effect of the rifle bullet had in recent wars been the cause of numerous mistakes and false accusations. Küttner recognized that fragments of shells and bombs may inflict a single wound of entry and numerous wounds of exit. He has seen a whole series of such cases, and he believes that they are not rare. He has seen not only single wounds of entry and multiple wounds of exit inflicted by shell fragments, but with the x-rays has demonstrated the pres-

ence of many fragments of shell in the body, though there was only one wound of entry. He reproduces photographs of two metal boxes for holding a gas mask outfit which had been struck by fragments from an aerial bomb. Both boxes show a single hole of entry, while on the opposite side there were many large and small holes of exit. An analysis of the splinters from the bombs revealed no intrinsic explosive qualities, only nickel molybdenic steel.

**INVESTIGATION OF TRENCH FEVER BEGUN.**—Sixty enlisted men of the United States Sanitary Corps, all from New England, are now serving as hosts to normal or infected lice, or have received injections of blood from soldiers known to have been suffering from trench fever. The organism producing the fever has not yet been discovered by microscope, and an investigation is under way to discover and control it. Trench fever heads the list of fevers among the British troops, and although it is not fatal, it means an absence of six to eight weeks from the ranks. Scarcity of physicians in the British Army prevented the Royal Army Medical Corps from studying the cause of the disease. The American Red Cross decided to undertake a survey based on the yellow fever investigation in Cuba.

With the approval of General Pershing, a call for volunteers was made, and virtually every member of the 101st, 102d, and 104th Field Hospitals and the 101st, 103d, and 104th Ambulance Companies offered to submit to the experiment. Sixty men were selected, and were quartered in a British base hospital, with a complete laboratory equipment, and everything necessary to trace the transmission of the parasites causing the disease. There the effect of the injections received is being observed.

**NEED OF SURGICAL DRESSINGS.**—The New England Surgical Dressings Committee, now operating as an auxiliary of the American Red Cross, issues an appeal to the public for \$30,000, to be used within the next three months for the purchase of material to be made into surgical dressings. Although this committee is producing over 1,000,000 dressings a month, the demand is so enormous that it desires not only to continue the present product, but to increase shipments to meet the necessities of armies in the field.

The appeal follows:

"The Surgical Dressings Committee once more asks your help. The public has been most generous in its support, but the great increase

in the number of dressings produced and shipped makes it necessary to ask again for more money.

The committee has made every endeavor to supply more and more dressings, the need for which grows constantly. The number produced has risen from 990,712 sent during the month of August last to 1,314,000 sent during January. Materials cost more than they did six months ago. Obviously this increased production requires more money.

Some of the branches have raised their output beyond their capacity to raise money. The workers are anxious to keep on increasing their product. They should receive from this committee the financial assistance they require to enable them to do so.

The committee has been fortunate in being able to supply the Red Cross with some of the dressings they have from time to time needed. The cost of these does not constitute any part of the increased expenses, for they are paid for by the Red Cross. Neither are they included in the 5,800,000 dressings shipped during the past six months directly to Europe, for the use of the United States Army hospitals and those of our Allies. The need for them is far from being met, even by the large number that has been sent. It is the desire of the committee to stimulate production still further, and to increase the shipments as rapidly as possible. We need at least \$30,000 for the next three months' expenditures, and we appeal for assistance, in the confident belief that the supply of dressings for wounded soldiers will not be allowed to fall short, even though the demands of the war are a heavy burden on every one.

Checks may be made to the order of the Surgical Dressings Committee and sent to the Old Colony Trust Company, 17 Court Street, Boston.

JOHN W. ELLIOTT, M.D.,  
MARGARET D. PORTER,  
ELIZABETH CABOT LYMAN,  
*Executive Committee."*

#### BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending March 9, 1918, the number of deaths reported was 299, against 278 last year, with a rate of 19.88, against 18.77 last year. There were 42 deaths under one year of age, against 38 last year.

The number of cases of principal reportable diseases were: diphtheria, 71; scarlet fever, 32; measles, 162; whooping cough, 40; typhoid fever, 1; tuberculosis, 50.

Included in the above were the following cases of non-residents: diphtheria, 11; scarlet fever, 5; measles, 2; whooping cough, 1; tuberculosis, 6.



Total deaths from these diseases were: diphtheria, 6; measles, 5; whooping cough, 4; tuberculosis, 26.

Included in the above were the following non-residents: diphtheria, 5; measles, 3; whooping cough, 4; tuberculosis, 24.

**HOSPITAL BEQUESTS.**—By the will of the late Mrs. Charlotte M. Fiske of Boston, the Free Hospital for Women at Brookline and the Boston Home for Incurables each receives a bequest of \$5000.

The will of the late George Von L. Meyer, of Hamilton, Mass., contains bequests of \$2500 each to the Boston Lying-in Hospital, the Massachusetts General Hospital, and the Huntington Memorial Hospital, Boston.

**DIPHTHERIA DEATH RATE.**—Eight out of every 100 persons sick with diphtheria in Massachusetts die. This is by far too high a death rate, and every precaution should be taken to guard against the disease. The early calling of a physician in case of diphtheria, and the prompt administration of diphtheria antitoxin in sufficient amounts will decrease this fatality rate at once. The following methods for prevention of diphtheria are advocated by the State Department of Health of Massachusetts.

1. Isolation of diphtheria carriers and all clinical cases of diphtheria on the appearance of the first symptoms of the disease.
2. Culturing of families, schools, institutions, and other contacts.
3. Immunization of all contacts with diphtheria antitoxin, using 1000 units.
4. Use of the Schick test in families, schools, and institutions.
5. Active immunization with toxin-antitoxin of those individuals who prove to be susceptible to the disease by the Schick test.

Isolation of cases, culturing of contacts and immunization by antitoxin have been carried out for several years. This immunization is fleeting and protects the person for only a few weeks, but is very efficient in checking outbreaks of the disease. The Schick test and active immunization with toxin-antitoxin enables the health officer to locate the persons who are susceptible to the disease, and to immunize these persons with toxin-antitoxin. This immunity in practically 95% of all persons so treated will last for years.

## Miscellany.

### MALNUTRITION AMONG SCHOOL CHILDREN. RESULT OF A RECENT INVESTIGATION.

THE BUREAU OF CHILD HYGIENE has just completed a survey of 171,691 school children in the public schools of the Borough of Manhattan. This number represents all of the children who were in attendance at school at the time the survey was made. It is, however, far below the registration figures for the borough, owing to the facts that the survey was made during intensely cold weather and many children were kept out of school at that time. It is believed, however, that the survey represents very accurately the general physical condition of the children. Indeed, the fact that these children came to school while other children remained at home would seem to show that they were rather hardier, from a physical standpoint, than the children who were not examined.

This survey was made for the sole purpose of determining the condition of nutrition of these children. The Dunfermline scale was used. No. 1 means a child who is perfectly normal from the nutritional point of view. No. 2 means a child who is in passable condition, that is, one who is not perfectly normal but who does not yet have the stigmata of undernourishment. These are the so-called "borderline cases" and any pronounced change in their living conditions would undoubtedly have a distinct effect upon their physical condition. No. 3 indicates a child who is distinctly undernourished, who bears the stigmata of malnutrition and who needs immediate supervision and readjustment of life and environment. No. 4 represents a child so seriously undernourished as to need immediate medical attention; in fact, a case of pronounced malnutrition or marasmus.

Of the children six years of age, 22.5% were undernourished. This undernourishment increased in percentage up to nine years of age where 25.2% were found undernourished. Then followed a gradual decrease up to the age of 16 years where only 12.1% were found undernourished. The general proportion of actual undernourishment for the borough was 21.6%. Previous surveys made in other boroughs and statistics of undernourishment on record in the department pertaining to the children of these

boroughs show that conditions are just about the same as in the Borough of Manhattan.

It may safely be assumed that the figures found in Manhattan are applicable to the other boroughs. Applying them in this way to the total school registration of about one million children in the public and parochial schools of New York City, it is probable that 17.3%, or 173,000, are in normal condition as regards nutrition, 61.1%, or 611,000, are passable or borderline cases, 18.5% are seriously affected with malnutrition and 3.1% are in a bad stage.

It was not found that nationality played any important part in the consideration of the prevalence of undernourishment, although it is of interest to note that of the Italian children examined, 28.7% were found undernourished. These Italian children comprised 23% of the total number examined. The children from Russia and Poland, who comprised 26% of all the children examined, were found undernourished in 19.8% of the cases. The figures for the other countries have no particular significance, but range generally from 17% to 20%.

It should be distinctly understood that these children indicated as undernourished are not actually starving. According to Dr. S. J. Baker, under whose direction this investigation was made, these children are undernourished as a result of long-continued under-feeding or wrong feeding. She calls attention to the fact that this condition has been increasing in seriousness for the last year and a half and has resulted mainly from the fact that the increase in wages has not kept pace with the decrease in the buying power of the dollar for food. It has been shown that during the past few years wages have increased an average of 18% while the buying power of the dollar for food has decreased about 62% during the same period.

Children are always the first in any community to react to any environmental changes or conditions which pertain to hygiene and food. Investigations have shown that large numbers of children are being fed on tea or coffee or beer or wine with bread; that milk is used sparingly, if at all, and that the proper type of food for children is seldom used. The condition is one that should be met not by charity or philanthropy. It can be met, however, in two ways: First, to help the mothers of the city to understand how they may, within their limited incomes, purchase and prepare proper food for their children, and, second, to make available a

daily meal for all children in the city at a price they can afford to pay. Such a meal could easily be provided through the school lunch system and should be available for all children of school age and pre-school age, not only during the school year, but also during vacations.

### CHILDREN FIRST.

"THE results of underfeeding or indiscriminate food substitution in childhood are startlingly shown abroad as a result of the war, and are beginning to be evident in our own great cities"; and "milk has no substitute in the diet of the child." These and other unqualified statements of the importance of guarding the milk supply to prevent the physical deterioration of American children during the war are scattered through the latest report issued by the Children's Bureau of the U. S. Department of Labor and entitled, "Milk, the Indispensable Food for Children."

This report, with its striking figures showing a decrease in the amount of milk now available and in the amount which is finding its way to the children in poor homes, has special interest in connection with the campaign to save 100,000 lives of babies and little children during the second year of the war. It not only emphasizes the fact that children who are deprived of milk cannot thrive properly, but it analyzes the changes in the production and export of dairy products during the war, and shows the necessity of public action.

"The nourishment of our children is the first duty of the nation. Since milk and milk products are a vital necessity for children, for nursing mothers, and for the sick and wounded, the public should be made to realize that the children's need for dairy products should be assured."

England and Italy have regulated the sale of cream and curtailed the use of butter, in order that their child population might receive the more adequate and economical nourishment offered by whole milk. Germany, early in the war, provided that the adult civilian population might have milk only after the needs of children, mothers, invalids, and the army were met.

The report discusses the various forms in which cows' milk may be used for children. For the young baby, it says, there is nothing so good as mother's milk.

"Never before in the history of civilization has it been so urgent a matter that every child should have breast milk for as long a time as possible, in order that every child that survives birth may have the best chance for life and health."

But for children under two, other than those breast fed, and for older children, the report states that cows' milk is an absolute necessity if disease and death are to be kept within bounds, and if the coming generation is to survive and to sustain the national standards. "'Children first' should be part of the national food program."

"It is the duty now of every individual community to see that its children have milk of good quality and in sufficient amount to assure their normal development. To do this the price of milk must be controlled or fixed, and the milk supply to infants and children carefully safeguarded. The malnutrition of our children was, even before 1914, a serious national problem and one demanding urgent attention. Poverty and ignorance of dietary essentials have been ever-present factors in the malnutrition of the young, and war conditions cannot fail to increase the gravity of the situation and the difficulties of maintaining the health of the nation."

#### HYGIENE AND SANITATION IN JERUSALEM.

In the issue of the *Lancet* for February 23, 1918, Dr. E. W. G. Masterman presents a valuable account of Jerusalem from the point of view of health and disease, from which the following abstracts seem of interest:

"Jerusalem lies some 2400 feet above the level of the Mediterranean and 3700 feet above the Dead Sea. The site is largely shut in by higher mountains. The older parts of the city are built upon a vast accumulation of rubbish, the débris of previous cities, in places over 100 feet deep. Modern Jerusalem has in normal times about 80,000 inhabitants, over two-thirds being Jews, most of whom depend largely upon charity. During the last thirty years there has been a rapid growth of suburbs to the north, northwest, and west.

As Jerusalem is inhabited by representatives of all the nations of Christendom, is visited annually by thousands of tourists and pilgrims from all parts, and is a 'Sacred' City in the eyes of Christians, Jews and Moslems, its sanitary condition cannot continue a matter of indifference, as it has been to a large extent under the Turkish Government. Almost all efforts made

to improve the condition of the city have come from outside sources, and many radical improvements which different European bodies would gladly have undertaken as to water-supply, drainage, etc., have been persistently thwarted by the Turkish authorities.

As to climate, the mean temperature for the four summer months (June to September) is in Jerusalem 74° F. (in the maritime plains 80°; and on the banks of the Jordan 92.5°). The mean maximum temperature in these summer months is 84.3°; a temperature of over 100° in the shade is very exceptional. The temperature is largely mitigated by dryness of atmosphere and by a cool breeze. During the rainy months of winter (December to March) the mean temperature is 53.6° (in the plains 57.1° and on the Jordan 71.2°). Frost is not uncommon, and snow some years lies for several days—sometimes to a considerable depth.

The rainfall in Jerusalem has now been carefully watched for over half a century. Like all this part of the Near East there is a wet winter season and a very dry summer season, each of about four months' duration. The mean rainfall is now about 26.5 inches; maximum, 42.95 inches, 1877-78; minimum, 12.5 in 1869-70. The most disagreeable and unhealthy days occur during May and from the middle of September to the end of October, when the dry southeast wind—the sirocco—blows sometimes for several successive days hot and stifling from over the deserts.

The water-supply of Jerusalem has ever been a problem. The ancient spring known as the 'Virgin's Spring,' or to the Arabs 'Ain Umm ed Deraj' (lit. the Spring of the Mother of the Steps), and known in the Old Testament as Gihon, originally, no doubt, gave a fresh and plentiful supply. But though it is now at times fairly plentiful—but intermittent—the quality is bad. The other source, Bîr Eyyub, is a deep well with a perennial supply at the bottom of equally sewage-tainted water. In Roman times—possibly originally a little earlier—great aqueducts were made to bring water to the city, but the most that reaches the city now is a four-inch iron pipe, and at two points the poor are at stated hours allowed a meager supply. This is the only really fresh water available, but the whole site of the city is riddled with cisterns of many kinds. All houses have private cisterns and they are a satisfactory source of supply if kept in good repair, cleaned periodically, and if no water is allowed to run into them except from a well-cleaned roof. But these provisos are often neglected. There has in the past been no sort of inspection or control over these cisterns, all of which need to be most rigidly supervised and provided with pumps. Various schemes have been made in recent years to provide the city with a better water-supply. I think it is a question whether it would not be more practical to enclose a great catchment area on higher ground west of the city and collect the rain-

water in cisterns for conveyance to the city by pipes.

The drainage of Jerusalem also requires immediate attention. The existing sewers are old and utterly useless. Needless to say, nearly all the w.c.'s in the city are untrapped—the native w.c. being an open slit between flagstones, flushed only at rare intervals; it is not surprising that flies abound all the summer, and the older city is one of various and unpleasant odours. In some of the hospitals and schools a system of cesspools has been adopted.

Under the Turks no system of notification of infectious diseases was inaugurated, and amid many hospitals no efficient accommodation of cases needing isolation was provided. The only disease which seems to have been taken seriously in the Turkish Empire is cholera, and most elaborate, but fantastic and ridiculous, precautions are taken from time to time to exclude this disease. It must be admitted that on several occasions when cholera has raged in other districts, it failed to reach Jerusalem. Vaccination is not enforced and smallpox epidemics in this city are terrible in the extreme. Notification of deaths has never been carried out seriously. Recently certificates of death from medical men were asked for by the burial authorities, but the whole thing was an utter farce and, therefore, was rightly dropped.

It must not be thought that all this want of health organization was taken lightly by the medical men of the city. The difficulty has been the supineness of the Turks, the jealousy of all the various nationalities and their unwillingness to work together, and the want of close union and coöperation on the part of the medical men. The first really hopeful movement in a right direction was made shortly before the war, when, through the efforts of Professor Mühlens, a German professor of tropical diseases sent out by a Berlin committee, a kind of 'International Health Bureau' was with infinite difficulty established. Professor Mühlens was genuinely anxious to get the coöperation of other nationalities, and particularly of England. Locally, I had the privilege of representing the British and American consuls on the international committee, and was endeavoring almost up to the outbreak of hostilities to get a whole-time British scientific medical man sent out from England to coöperate in the laboratory work. The war has swept all this away, but while it was there great improvements were made. A pathological laboratory was started, where any medical men in the city could have blood examinations and tests made, e.g., Widal, Wassermann, cultures, films of malaria, etc.; tumors were examined, etc.; serums were prepared. There was a small Pasteur Institute for rabies. This was only the beginning of what it was hoped would be done. By means of lectures and publications in English, French, German, and Arabic, a knowledge of the true nature of malaria and its mode of

spread was being diffused, and an attempt to purify the cisterns was begun.

All this now waits for England to reorganize. It is a great work which is certain, if carried out, to have enormous results for good in the city and the land. Jerusalem is a city of hospitals, but half of them could be emptied if an efficient department of public health would organize these needed reforms. Although it may be necessary to have some form of international health committee, the executive should be British and free from any form of partisanship."

The most prevalent disease in Jerusalem is malaria. Two factors of importance bear particularly upon this question.

"The first is the great number of mosquitoes, among which *Anopheles maculipennis* are plentiful. The second is that the nearness of the tropical Jordan valley, where tropical malaria is endemic, provides a source of constant reinfection. There is no reason whatever to doubt that with proper organization this pest could be reduced to very small dimensions.

Blackwater fever is not uncommon in other parts of Palestine, but I have known several fatal cases originate in Jerusalem itself.

Of other tropical diseases it is only necessary to make brief mention here. Dengue fever occurs in rather frequent epidemics. Recurrent fever due to spirochetæ is found occasionally. There are many sufferers from tropical boil in Jerusalem—most of these come from Aleppo and its neighborhood and from Bagdad, and I have never seen one originate in the mountain districts of Palestine. There is a local variety of the disease known as Jericho boil, which occurs in the Jordan Valley, which I have described elsewhere. I excised some of these, and the pathologist who investigated them considered that it was a distinct disease. This is very doubtful.

Jerusalem is one of the four centers in the Holy Land where lepers congregate. The majority, happily, are segregated in the Moravian Leper Hospital.

Among diseases of the eye, the commonest is ophthalmia. The onset of the annual exacerbation of ophthalmia is usually just after the occurrence of the highest mean temperature. Infection is due to flies and to the use of common mattresses or the use of dirty rags, etc., for wiping the eyes. Cataract occurs much as in England, but the cases stand operations much better, iritis being a rare disease in Jerusalem. 'In Palestine not 10% of the population have absolutely sound eyes' (Butler).

By far the oldest establishment is the English Mission Hospital, founded in 1842 and transferred to handsome new buildings a mile outside the old city walls in 1897. The new hospital was erected on plans made by Professor Beresford Pite. It is built on the pavilion system, and has two wards for men, two for women, and two for children. There are also some private wards for English tourists; its present

number of beds could be doubled without altering the original plan. It had before the war accommodation for 70 beds and cots, with a staff of two English doctors, six English nursing sisters, and native assistant nurses and servants. It has in the past been used exclusively for Jews (Kosher food being the rule) except as regards the private patients, but since the war broke out it became—until our capture of Jerusalem—a 'Red Crescent Hospital,' and I hear that at one time no less than 200 typhus cases were accommodated there. It is now temporarily a Divisional headquarters, but may shortly be reopened as a general hospital for all classes, and, it is to be hoped, will continue to be so used.

The German Hospital, under the Kaiserwerth Deaconesses Committee, was originally an outgrowth of the English Hospital. It, too, was at first within the old wall, but now has fine buildings near the latter. It accommodates a little over 100 beds, and is a good surgical center. Then there are besides a Turkish Municipal Hospital, and French, Russian, Greek, Armenian, and Italian Hospitals—the last a very handsome building still in process of construction when the war broke out. There was also a small hospital, started in rented premises, in connection with the English bishop and supported largely from Canada.

The Jews have four general hospitals, one of which, known as Shaaret Zedek, is the largest and finest hospital in the city. There are a hospital for lepers supported by the Moravian community, and two eye hospitals. One of these is Jewish, the other is the British Ophthalmic Hospital, one of the most appreciated institutions in Jerusalem. It is supported by the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England. It has two surgeons and a competent staff, and is of immense benefit, not only to the residents of Jerusalem of all classes, but also draws patients from every part of Palestine. It occupies picturesque buildings on the western side of the valley of Hinnom between the railway station and the Jaffa Gate. Between 30,000 and 40,000 out-patients and 1200 in-patients are treated annually. News comes to hand that the Turks used it as an ammunition store, and blew a great part of it up when they had so hastily to evacuate the city."

#### MORE NURSES NEEDED FOR WAR SERVICE.

THE importance of an intensive training in nursing for young women in the large colleges of the country was emphasized at a meeting recently held at the State House, under the auspices of the Massachusetts Public Safety Committee. The conference was called to consider methods of increasing the number of nurses

available for war service in Europe and America. Several hundred persons attended the meeting, representing the faculties and student bodies of leading New England educational institutions and nurses' associations.

Miss Julia Lathrop, chief of the Children's Bureau, Department of Labor, Washington, told of a twelve weeks' summer course which Vassar College would give to its regular students and others qualified in the elementary principles of nursing. She explained that after the student had completed the course she could then enter a hospital and become a graduate nurse after two years' additional training. By such a method, a large number of nurses would be developed who could relieve nurses now in hospitals for war duty in France, and be of material assistance to the country when the war is ended.

Miss Anne H. Strong, professor at Simmons College, spoke upon public health nursing. There is now an inadequate number of women trained for this purpose. Miss Strong made the statement that, while there are 6500 women capable of donning nurses' gowns in the United States, there are in the city of Berlin alone 6500 women similarly qualified. The District Nursing Association of Boston is giving a course to girls which already has resulted in the securing of more than 80 young women competent to perform the service required in this line. A number of young women have already registered for the intensive training course at Vassar.

#### VENTILATION AFTER FUMIGATION.

THE spread of the bubonic plague to all parts of the world in recent years has turned attention to the necessity of improved means for the destruction of rats on board ships, as it is through these animals that the disease is transmitted. As rats are great travelers, and as they are to be found in all parts of vessels, and so infect all parts, it is necessary that every part of the ship be fumigated to prevent the spread of the disease.

The fumigants now most used for this purpose are sulphur dioxide and hydrocyanic acid gas. The objections to sulphur dioxide are that it takes a great length of time for the fumes to dissipate, often as much as 16-24 hours, and that it sometimes causes great damage. Hydro-

cyanic acid gas is much more efficient, for it quickly destroys animal life, does no damage to inanimate objects, and smaller quantities are needed. It takes a much shorter time to ventilate a ship after hydrocyanic acid gas than after sulphur dioxide, usually only 2-3 hours being required, but the exact time cannot be determined, owing to changing weather conditions.

As it is important that quarantine officers and steamship agents should know when persons may safely return on board, a system of artificial ventilation is a distinct saving of time. Experiments have been tried along these lines, and it has been found that the best system of artificial ventilation consists of a huge gasoline-driven air propeller, designed to propel boats and sleds. This delivers about 22,700 cubic feet of air per minute, is operated in a horizontal position, and drives air directly downward into the fumigated section of the ship. For holds deeper than thirty feet, a muslin chute is used to propel the air in the proper direction. A hold may be made safe when all hatches have been opened and the aerotruster operated for 30 minutes. A vessel with several holds is usually safe after three hours.

It should be understood that artificial ventilation does not take the place of natural ventilation, and on a warm, dry day, with a good breeze, natural ventilation may save time. But in cloudy or humid weather, artificial ventilation undoubtedly saves much time for all parties concerned.

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#### APPLICATION OF OZONE TO THE PURIFICATION OF SWIMMING POOLS.

RECIRCULATION and disinfection of swimming pool water may now be accepted as standard and mutually interdependent procedures in the sanitary control of plunge baths. Experimental data collected during the past few years have demonstrated beyond doubt the necessity of resorting to refiltration to aid in swimming pool purification, unless fresh, warm, well-filtered water is constantly supplied to the pool. In the latter process the waste of water, and of coal for heating it, coupled with the difficulty of removing all suspended matter by an initial filtration, are sufficient reasons for adopting refiltration of the pool water as a standard procedure. A clear water is essential, not mainly because of

esthetic reasons, but for the reduction of the hazard of drowning.

The methods of disinfection hitherto employed are objectionable on one score or another. Ultraviolet light in actual practice has proved ineffective; copper sulphate in low dilutions is unreliable, and in high concentration is not only costly, but produces a water disagreeable to swim in; chlorine compounds, while effective as disinfectants, require a technical control usually not available in swimming pools, and when used in excess produce objectionable taste and odors in the water.

Ozone is now believed to be the best agent for the purification of swimming pool water. When one part of ozone per million parts of water is used, the result obtained is sterile water. When half part ozone per million parts of water is used, a bacterial reduction of 99.8% results, except when too great an excess of air is introduced with the ozone.

A study of the cost of operation of the ozonator has shown that a current consumption of 2 kilowatts per day with alternating current, and of 4 kilowatts per day with direct current, plus one cent a day for calcium chloride, represents the total operating cost for a 60,000 gallon pool. This amounts to 11 to 15 cents a day for alternating current (at 5 to 7 cents per kilowatt), and to 21 to 29 cents a day with direct current. The cost of refilling the pool is at least \$30. The use of the ozonator decreases the number of times the pool must be emptied to such an extent that the cost of the installation is soon paid for.

The application of ozone to the purification of swimming pools is automatic in control, reliable in action, and inexpensive in application. No other chemical can be used to such great advantage in this connection.

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#### Correspondence.

##### BACTERIOLOGY OF CEREBROSPINAL MENINGITIS.

Welsh Metropolitan War Hospital,  
Cardiff, Wales, Feb. 11, 1918.

Mr. Editor:—

I notice from your editorial of Jan. 17, 1918, on "The Military Significance of Cerebrospinal Meningitis" that the new knowledge of the bacteriology of this disease has not yet come to your attention.

When on duty in London in September, 1917, I learned that studies conducted this side of the water have clearly demonstrated that the meningococcus is not an individual organism but is a group of at least

four, as we also now know the pneumococcus to be. These can readily be distinguished by certain precipitation or agglutination tests.

The method of treatment now is to identify the type of organism and to treat the case with a polyvalent (all four types) serum strongly fortified with the individual type of meningococcus.

Carriers are detected by culturing the nasopharynx in large groups of men. The plate method of growing the germs is used. Military units with not more than six per cent. of carriers have little trouble with meningitis, but when, as is frequently found, the rate runs from 20% to 40% or more, trouble can be predicted. The carrier rate is then cut down by inhalations of vaporized flavine followed later by zinc sulphate, also vaporized.

This is the method that the British and (I believe) other armies are now employing to keep down the incidence of cerebrospinal meningitis in training camps. The work is relatively simple as new medical officers are trained for the work in but one week.

Yours truly,

WM. D. REID, *Lieut., M.O.R.C.*

#### VENEREAL DRUG LEGISLATION.

Boston, March 9, 1918.

Mr. Editor:—

*Re*—proposed legislation “relative to the prescribing and compounding of certain drugs.”

Is it not true that the existing laws of this Commonwealth state that none but a registered physician shall prescribe or recommend *any* drugs or medicines for the cure or alleviation of *any* disease? Such being true, is it not a fact that “counter prescribing and advice” and back room attention—in other words, the treatment of diseases, or the practice of medicine—are prevalent in the majority of the drug stores in this state? Still further, is it not true that the quack medicine and nostrum manufacturers depend upon such drug stores (and certain newspapers and department stores) to disseminate their fraudulent and worthless products? Ergo, why not enforce the existing laws as they are written? Would not such enforcement cover the ground?

Yours very truly,

JAMES BROWN THORNTON, M.D.

#### SOCIETY NOTICES.

**NEW ENGLAND PHYSICAL THERAPEUTIC ASSOCIATION.**—The next regular meeting of the New England Physical Therapeutic Association will be held at the Hotel Brunswick, Boston, Tuesday, March 26, at 8 P.M. Dinner will be served at 6 P.M. Dr. Percy G. Stiles, of Harvard Medical School, will read a paper on the Autonomic Nervous System.

A cordial invitation is extended to all members of the medical profession to be present.

FRANK E. STOWELL, M.D., *President*,  
FREDERICK H. MORSE, M.D., *Secretary*,  
FRANK B. GRANGER, M.D., *Treasurer*.

**BOSTON MEDICAL LIBRARY** in conjunction with the **SUFFOLK DISTRICT MEDICAL SOCIETY.**—Medical Section meeting, John Ware Hall, Wednesday, March 20, 1918, at 8.15 P.M.

“Social and Health Conditions among the Civilian

Population of France.” Dr. James Alexander Miller. Dr. Miller was a member of the commission sent last summer to France by the Rockefeller Foundation to undertake anti-tuberculosis work.

Light refreshments after the meeting.

EDWIN A. LOCKE, M.D., *Chairman*,  
GEORGE R. MINOT, M.D., *Secretary*.

**MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY.**—A special meeting of the Society will be held at the Boston Medical Library on Friday, March 22, 1918, at 12 o'clock noon.

Business: Report and recommendations of the Committee on the question of financial assistance of those who enlist.

Consideration of the question of omitting the annual dinner this year.

Paper: John Baptist Blake, Chairman of the Massachusetts State Committee for National Defense, will speak on the Medical Aspects of the War.

Lunch will be served at 1.15 P.M.

LYMAN S. HAPGOOD, *Secretary*.

**THE NORFOLK DISTRICT MEDICAL SOCIETY.**—A regular meeting of the Society will be held at the Roxbury Masonic Temple, 171 Warren Street, March 26, at 8.00 P.M. sharp. Phone Roxbury 22753.

Communication: “The Management of Syphilis in the British Army,” G. W. Winchester, M.D., Central Military Hospital, Lichfield, England.

Discussion, F. P. McCarthy, M.D.

The Censors meet for the examination of candidates, Thursday, May 2, 1918. Annual Meeting, Wednesday, May 15, 1918.

BRADFORD KENT, M.D., *Secretary*.

**EAST BOSTON MEDICAL SOCIETY.**—Dr. W. P. Graves will speak before the East Boston Medical Society Friday, March 22, at 8.30 P.M., at Walcott Hall, Central Square.

Subject: “Ovarian Organotherapy.”

Physicians interested in this subject are invited to be present.

J. DANFORTH TAYLOR, M.D., *Secretary*.

#### RECENT DEATHS.

**DR. CLARENCE L. HOWES**, one of the most prominent medical practitioners in Plymouth County, died recently at his home at Hanover Four Corners, after a short illness. He was born at Mattapoisett, March 28, 1848, the son of Dr. Woodbridge Howes. The family removed to Hanover in 1864, and young Howes attended Hanover Academy, where he fitted for Amherst College from which he graduated in 1869. After a period of school teaching he entered Massachusetts Institute of Technology and graduated in 1873 as a civil engineer. He followed this profession until 1876 when he began the study of medicine. He graduated from the Long Island College Hospital in 1878, and then returned to Hanover where he soon built up a practice which extended to all parts of Plymouth County. He was a member of the Hanover school committee for 33 consecutive years, was prominent in town and county affairs and a writer on contemporaneous matters. He is survived by a daughter, Caroline.

**DR. CHARLES F. OSMAN** of Dorchester, died recently at his home. He was born in New York, July 27, 1858, but his father, also a physician, removed to Boston when the son was but a boy, and his school years were passed here. He was graduated from Harvard and also from the Harvard Medical School in the Class of 1880, and had since practised in Dorchester. Dr. Osman was a member of various medical societies. He is survived by his widow and one daughter.



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Session 1918-1919. Candidates are required to present evidence of the completion of two years of collegiate work toward a Bachelor's degree in a college recognized by the New York State Department of Education. This two years of college work must include at least one year of college work in Chemistry, Physics, Biology, English and either French or German.

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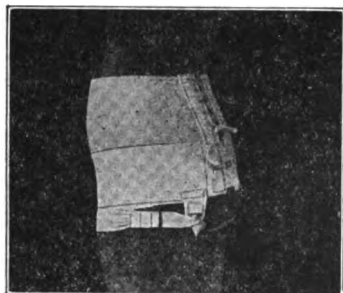
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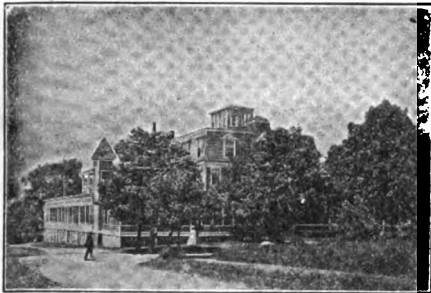
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VOL. CLXXVIII  
No. 18

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## CONTENTS

### ADDRESSES

THE PLACE OF THE HOME, THE DISPENSARY, THE SANATORIUM OR HOSPITAL IN THE TREATMENT OF TUBERCULOSIS (VALUE OF DIET, REST, FRESH AIR, ETC.).

*By Edward O. Otis, M.D., Boston.*

SOME MODERN MEDICAL PROBLEMS. *By Timothy Leary, M.D., Boston.*

### ORIGINAL ARTICLES

REVISED IDEAS CONCERNING FOOT DEFECTS AND ORTHOPEDIC FOOTWEAR.

*By Herman W. Marshall, M.D., Boston.*

DISPENSARIES IN MASSACHUSETTS, PARTICULARLY IN BOSTON.

*By Michael M. Davis, Jr., Ph.D., Boston*

ON THE POSSIBLE NATURE OF MEASLES. *By Leverett D. Bristol, M.D., Augusta, Me.*

### EDITORIALS

INFECTIVE JAUNDICE AND WEIL'S DISEASE.

INCIPIENT AND ADVANCED TUBERCULOSIS.

THE SERUM TREATMENT OF PNEUMONIA.

GRAVE OF A FAMOUS BRITISH SURGEON.

For complete table of contents, see first text page.

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### MEDICINE.

#### THE FRAMINGHAM HEALTH AND TUBERCULOSIS DEMONSTRATION.

ARMSTRONG, D. B. (*Jour. A. M. A.*, Sept. 29, 1917) gives an excellent descriptive outline of the organization's aims and methods used in this new and progressive method of dealing with community health. The scheme appeals to one's sense of adequateness and is a distinct advance in the right direction for the conservation of the community health. The article is written with careful consideration, having in view its application to other economic conditions affected by public health. [E. H. R.]

#### SPECIFIC SERUM THERAPY OF EPIDEMIC POLIOMYELITIS.

RAZUM, J. W., and WILLY, R. G. (*Jour. A. M. A.*, Oct. 13, 1917) report on 159 cases treated with antipoliomyelitic horse serum and find that of 159 patients in all stages of the disease receiving serum, 19, or 11.9%, died, while among 100 cases occurring during the same period of time, in which no serum was given, 38, or 38%, died. The series of treated cases seems to demonstrate the harmlessness of serum treatment when properly given. The serum appears to have the power of definitely preventing the onset of paralysis, when administered early. The action of the serum is more definite in arresting the extension of paralysis and diminishing its severity than in effecting its disappearance. The earlier the serum is administered the more striking are its results. Serum should be injected intraspinally in small doses and at the same time intravenously in larger amounts. The injection is followed by an actual fall in temperature and other definite evidences of general improvement. [E. H. R.]

#### SYMPTOMATOLOGY OF THE NERVOUS SYSTEM IN CHRONIC INTESTINAL TOXEMIA.

SATTERLEE, G. R., and ELDRIDGE, W. W. (*Jour. A. M. A.*, Oct. 27, 1917), in a very suggestive article, state that the nervous system is almost invariably affected, in whole or in part, by chronic intestinal toxemia. The nervous symptoms of this condition are often the most prominent in the whole symptomatology. A thorough investigation of the gastro-intestinal tract is essential in cases exhibiting a chronic symptomatology of the nervous system, provided the usual obvious factors of etiology of disturbances of the nervous system can be excluded. Disturbances of the gastro-intestinal tract are more often the cause of a nervous symptomatology than the result of a diseased nervous system. In doubtful cases a proper hygiene and therapy of the intestinal tract may often be the deciding factor in differential diagnosis. [E. H. R.]

#### A STATISTICAL STUDY OF LEPROSY IN THE PHILIPPINE ISLANDS.

DENNEY, O. E. (*Jour. A. M. A.*, Dec. 29, 1917), in a study taken from the histories of 10,000 cases isolated in the Cullón Leper Colony, draws the following interesting conclusions: One half the cases of

(Continued on page vi.)

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(Continued from page iv.)

leprosy segregated in this colony have been diagnosed in adolescence. Twenty-nine per cent. of the lepers give definite histories of contact with leper relatives. No record has been made of contact with lepers other than relatives. It is probable that carefully taken histories would have revealed contact histories in all the lepers isolated, since the disease is widespread throughout the islands. Thirty-five per cent. of those giving histories of contact with a single leper relative were sisters and brothers, 27% were cousins, while 11% were leper children and 7% leper parents. In only one per cent. of the lepers who were married before admission to Culi6n the infection has been between husband and wife. The male sex is more frequently infected. The average duration of leprosy is 7.3 years. Mortality of children born of leper parents is high. The incidence of infection among children living in the colony from 1 to 10 years is 10.4%. Infection in children born of parents one of whom is a leper and living among lepers for from 7 to 10 years, is 44%. Nothing of importance in regard to the transmission of leprosy was learned from the study of the large number of cases. [E. H. R.]

### PARALYSIS OF RECURRENT LARYNGEAL NERVE ASSOCIATED WITH MITRAL STENOSIS.

BROWN, G. E., and HEMPSTEAD, R. E. (*The Journal of the American Medical Association*, Jan. 5, 1918) report an interesting case of this condition, the paralysis being of the left nerve and temporary, subsiding on re-establishment of compensation. The authors emphasize the importance of rigid chest examination in searching for a cause of such paralysis. [E. H. R.]

### BOTULISM.

DICKSON, E. C. (*The Journal of the American Medical Association*, Sept. 22, 1917), in a very timely article, shows up the danger of poisoning from vegetables canned by the cold pack method. He shows that the maximum sterilization used in the cold pack methods is not enough to kill the bacillus botulinus; which has been demonstrated in asparagus, corn, beans, etc., put up by this method. Such vegetables should not be used in salads when put up by the cold pack method, but should be recooked before using. [E. H. R.]

### A CRITIQUE OF BANTI'S DISEASE.

MOSCHCOWITZ, E. (*The Journal of the American Medical Association*, Sept. 29, 1917) believes that all the evidence obtainable gives us no right to believe that splenic anemia and Banti's disease are not identical. There is no reason for differentiating Banti's disease from other splenomegalies associated with anemia, on the ground that in Banti's disease no etiology can be determined. The author believes that we should regard Banti's disease as merely a nosologic and clinical entity which may be due to both known and unknown causes. The known causes are syphilis, alcohol, malaria, trypanosomiasis, persistence of umbilical vein, etc. In all of these an induration splenitis, splenomegaly, with eventual atrophy of the malpighian follicles and an anemia, are predominant factors. Banti's disease has no typical course and no diagnostic symptoms. The term "Banti's complex" would be a better one to apply to the condition present than "Banti's disease," which implies a distinct entity. [E. H. R.]

(Continued on page viii.)



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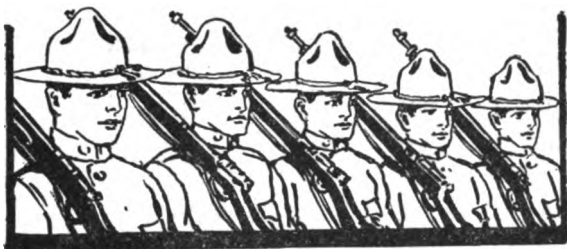
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(Continued from page vi.)

### WAR DEAFNESS AND ITS PREVENTION.

GUILD, S. R. (*The Journal of Clinical and Laboratory Medicine*, September, 1917) writes a very interesting article on this important subject. Apparently there are not existent any well-defined rules or methods of prevention. Cotton, either dry or moistened, is the substance most commonly used, but is not altogether satisfactory. Recently substances of a firmer nature, such as soft wax or paraffine, which can be moulded to the external meatus, are being more extensively employed, and seem to have advantages over other means employed. There is much room for reports on various methods used, and statistics as to results would be of great value. [E. H. R.]

### SURGERY.

#### OPERATIVE RISK IN CARDIAC DISEASE.

BLANCHFORD, J. M., WILLIUS, F. A., and HAINES, S. B. (*The Journal of the American Medical Association*, Dec. 15, 1917) state that valvular disease with good or reasonably good compensation should not be considered as a contraindication to operation, because the surgical risk is not materially increased in such cases. Careful anesthesia is, of course, essential. In the Mayo Clinic, the record of 120,000 ether anesthetics, with but one death under anesthesia, is evidence of the remarkable safety of ether when properly administered.

Extremely severe cardiac disease can often be definitely to completely relieved by the removal of an infectious, mechanical or toxic source of cardiac strain or degeneration. In cardiopaths suffering from goiter, the relief is often beyond all expectations. Of 100 patients operated on with auricular fibrillation, there was a gross surgical mortality of 5%, but in only 3% was death due to the cardiac disease. Therefore 3% represents the increased risk in 100 patients. Seven patients with partial or complete heart block (six partial, one complete) were operated on, with no deaths. In many cases of myocardial insufficiency much benefit is to be derived from carefully conducted surgical procedures. The tendency has been in the past to over- rather than underestimate the danger from cardiac disease in surgical procedures. [E. H. R.]

#### THE USE OF RELAXING INCISIONS IN DEALING WITH EXTENSIVE UNSTABLE SCARS.

DAVIS, J. S. (*The Journal of the American Medical Association*, Dec. 22, 1917) contributes a very valuable bit of technic to the treatment of large scars, particularly those from extensive burns, such as may surround the limb in the whole circumference, or the calvarium. In such cases he makes one or more deep linear scars, which allow of separation of the tissues, thus relieving tension and affording an opportunity for further successful skin grafting and a more healthy scar tissue. The procedure is simple and of decided value. [E. H. R.]

#### EXSTROPHY OF THE BLADDER AND ITS TREATMENT.

MAYO, C. H. (*The Journal of the American Medical Association*, Dec. 22, 1917) describes his procedure for the relief of this condition. It consists in a transplantation by the invaginating method, of both ureters, one at a time, into the sigmoid. This is done so that the ureter for one and one-half inches lies in the wall of the bowel between the muscularis and the mucosa before it enters the lumen. In this way ascending pyonephrosis is avoided. Thirteen patients

(Continued on page x.)

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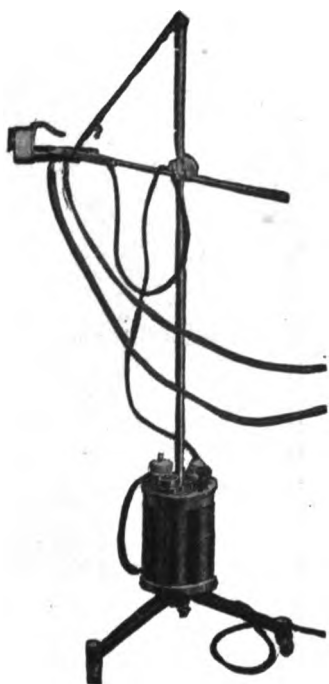
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(Continued from page viii.)

have been operated by this method with but one operative death. The article is illustrated.

[E. H. R.]

### TUBERCULOSIS OF THE APPENDIX.

SCOTT, J. R. (*The Annals of Surgery*, December, 1917) from his work, concludes that tuberculosis of the appendix occurs more frequently than is generally recognized. About 0.5% of all appendices removed surgically are tuberculous. There are three forms of this disease: miliary, ulcerative, and hyperplastic. The lesion may be primary or secondary to tuberculosis elsewhere in the body. The primary form is extremely rare, but in this type the prognosis is favorable, whereas in other types, except the hyperplastic, it is very unfavorable. The diagnosis rests on afternoon temperature, progressive losses of weight, night sweats, pain and tenderness in the right lower quadrant. The treatment is operative whenever possible.

[E. H. R.]

### A STUDY OF POSTOPERATIVE PNEUMONITIS.

NIPPLE, A. D. (*Surgery, Gynecology, and Obstetrics*, January, 1918), in a long, well-illustrated and very thorough article, concludes that this condition is a far more frequent complication than is either acknowledged or reported. Its incidence in surgical services varies largely with the care given to its detection. These pneumonias are carelessly overlooked under the term, "postoperative reaction." The author suggests that the x-ray is a valuable aid in the early diagnosis of this complication. The lung shadow usually appears in the radiogram before frank signs of consolidation can be elicited.

[E. H. R.]

### THE OPERATIVE INDICATIONS IN HOUR-GLASS STOMACH.

DOWNES, W. A. (*Surgery, Gynecology, and Obstetrics*, January, 1918), in a report of personal experience in 17 cases of this condition, well illustrated with excellent half-tone plates, discusses the different operative procedures for relief of hour-glass stomach, and concludes that medio-gastric resection or resection in continuity is the ideal operation, provided the pylorus is not stenosed. The end-results demonstrate the value of this procedure. Unfortunately, it is limited to the cases with a few adhesions in which the pouch is fairly large and which permit of free mobilization. It is a longer and more difficult operation than most procedures and hence should not be undertaken in the patient who is in very poor condition.

[E. H. R.]

### STUDIES IN THE TRANSPLANTATION OF WHOLE ORGANS.

DEDERER, C. (*The Journal of the American Medical Association*, Jan. 5, 1918), in an interesting experimental work, finds it is possible for a dog to remain alive and in good health more than four months after the transplantation of one kidney to the neck, even when the remaining kidney is removed two weeks after the transplantation. It was found that the quantity of urine from the cervical renal transplant was markedly increased after the removal of the other kidney. The neck seems to be a favorable site for the transplantation and observation of the secretion of a kidney.

[E. H. R.]

### RECURRENT OR HABITUAL DISLOCATION OF THE SHOULDER.

HENDERSON, M. G. (*The Journal of the American Medical Association*, Jan. 5, 1918) concludes from his

(Continued on page xli.)

THE PRESENT WAR will go down into history not only as the greatest the world has ever known as between man and man, but equally as great as between man and the disease germ.

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(Continued from page 2.)

study of this condition that these dislocations may be cured by operation, and that capsulorrhaphy is the operation of choice. This has been found sufficient in most cases. Resection of the head of the humerus is not a permissible procedure for this condition. Arthrodesis or ankylosis of the head of the bone to the scapula, with the arm at a right angle, would be an extreme means but permissible.

[E. H. R.]

#### OBSERVATIONS ON SURGICAL SHOCK.

HENDERSON *et al.* (*The Journal of the American Medical Association*, Sept. 22, 1917) find, experimentally, that prolonged, excessive secretion of epinephrin (if it occurs under pain) is not a critically important factor in the production of shock. It is, therefore, improbable that surgical shock is a result of excessive secretion of the supra-renal, secondary to sensory stimulation. No definite conclusions are reached regarding the relation of acidosis to shock, but it is suggested that apparently the reduction of the carbon dioxide content of the blood by the excessive breathing under pain, results either in loss of alkali or a formation or retention of other acids. The question is yet to be settled whether rebreathing will prevent or decrease the development of shock in severely wounded men as it does in animals under experimental conditions. For those already in shock and breathing fully, rebreathing involves a dangerous limitation of oxygen. It is suggested that administrations of percentages of carbon dioxide approximating the normal alveolar air is the measure which is most likely to succeed in combating shock. With the introduction of the gas mask in warfare, this can probably be readily accomplished.

[E. H. R.]

#### PATHOLOGY, PHYSIOLOGY AND PHARMACOLOGY.

##### THE DIAGNOSIS AND TREATMENT OF PATHOLOGICAL CONDITIONS IN THE ANTERIOR URETHRA THROUGH THE URETHROSCOPE.

HUNTER, M. (*The Medical Record*, Dec. 22, 1917), in a long eleven-page illustrated article, describes in clear detail his instruments and the precautions and contraindications in the performance of urethroscopy, preparations of instruments and patients, appearance of the normal and pathological urethra as seen through the urethroscope and the technic of the treatment of pathological conditions. The article is painstaking and thorough.

[E. H. R.]

##### SUBACUTE AND CHRONIC NON-TUBERCULOUS PULMONARY INFECTIONS.

BUTLER, J. G. (*The American Journal of the Medical Sciences*, December, 1917), in a very interesting and well-presented article, describes a condition previously mentioned, but not so thoroughly classified, by Lord, Riesman, Larabee, and others. Miller groups these non-tuberculous infections into three distinct but often merging groups—the subacute, the subacute with recurrences, and the chronic type. Sputum examinations are repeatedly negative for tubercle bacilli; it is, however, profuse and purulent. Seasonal incidence is greatest in the cooler months. The lower lobes are most commonly affected. Cough and expectoration are the predominant features. Hemoptysis is frequent and often marked.

[E. H. R.]

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## TABLE OF CONTENTS

March 28, 1918

<b>ADDRESSES</b>	
THE PLACE OF THE HOME, THE DISPENSARY, THE SANATORIUM OR HOSPITAL IN THE TREATMENT OF TUBERCULOSIS (VALUE OF DIET, REST, FRESH AIR, ETC.). <i>By Edward O. Otis, M.D., Boston</i> ..... 417 SOME MODERN MEDICAL PROBLEMS. <i>By Timothy Leary, M.D., Boston</i> ..... 422	Universal Military Education. <i>By Lucien Howe</i> ..... 440 Aids to Bacteriology. <i>By C. G. Moor, M.A.</i> ..... 440
<b>ORIGINAL ARTICLES</b>	
REVISED IDEAS CONCERNING FOOT DEFECTS AND ORTHOPEDIC FOOTWEAR. <i>By Herman W. Marshall, M.D., Boston</i> ..... 428 DISPENSARIES IN MASSACHUSETTS, PARTICULARLY IN BOSTON. <i>By Michael M. Davis, Jr., Ph.D., Boston</i> ..... 432 ON THE POSSIBLE NATURE OF MEASLES. <i>By Leverett D. Bristol, M.D., Dr. P.H., Augusta, Me.</i> ..... 437	<b>EDITORIALS</b> INFECTIVE JAUNDICE AND WEIL'S DISEASE. .... 441 INCIPIENT AND ADVANCED TUBERCULOSIS. .... 442 THE SERUM TREATMENT OF PNEUMONIA. .... 443 DEFINITION OF INFECTIVE STAGE OF VENEREAL DISEASE. .... 444 GRAVE OF A FAMOUS BRITISH SURGEON. .... 444 MEDICAL NOTES. .... 444
<b>BOOK REVIEWS</b>	
The Pathology of Nephritis. <i>By William Ophids</i> ..... 440 The Practical Medicine Series. Edited by Charles L. Mix, M.D., and John B. Murphy M.D. .... 440	<b>OBITUARY</b> JOHN GEORGE BLAKE, M.D. .... 446
<b>MISCELLANY</b>	
	NOTICES, RECENT DEATHS, ETC. .... 448

### Addresses.

THE PLACE OF THE HOME, THE DISPENSARY, THE SANATORIUM OR HOSPITAL IN THE TREATMENT OF TUBERCULOSIS (VALUE OF DIET, REST, FRESH AIR, ETC.).\*

BY EDWARD O. OTIS, M.D., BOSTON,

*Professor of Pulmonary Diseases and Ophthalmology,  
Tufts College Medical School.*

ONE can, in the first place, make various divisions of tuberculous individuals with regard to treatment.

*First.* There are those who receive no treatment at all; and of these there are some who never know that they have tuberculosis, and recover with no direct treatment. They suffer for a while from a moderate depression of health included under the generic term of "run down." They reorganize more or less their routine of life, take a vacation, pay more attention to rest and food, and in a short time their resistance recovers its normal power, and their usual health returns. There are others in a more or less advanced stage, who have no acute symptoms, maintain an equilibrium between the infection and the resistance, and live on indefinitely,

attending to their occupation with more or less regularity. They may or may not have been under treatment in a sanatorium or elsewhere; they know they have tuberculosis, for they cough and expectorate, but so long as their general health remains fairly good and no acute symptoms occur they go on their way and attend to their duties regardless of their disease. They are probably more or less of a menace to their community, but it is apparently one of the unavoidable risks incident to civilization.

*Second.* We can make the general division of those who are treated for their disease, between those who receive treatment at home or in an open health resort,—which includes the majority,—and those who go to some institution for treatment; and of those who are treated at home we can make a further distinction between those who receive treatment from a dispensary and those who are treated solely by their family physician.

All treatment must be based upon the same fundamental principles, whether at home or in a sanatorium, namely, what we all know as the "hygienic-dietetic" or "open air" treatment, and ideally this treatment should be most successfully carried out in a properly equipped and conducted sanatorium, but there are often personal or other considerations which render the home treatment the only one, and indeed the most satisfactory. Of course it is understood

\* An address before the Framingham Medical Club and the Community Health Station, January 8, 1918.

that in speaking of treatment here I am referring to such cases as offer a reasonable, or at least some chance of arrest or improvement, and it is difficult to determine at the outset what these cases are. Some very unpromising cases, as we all know, make remarkable recoveries, even when well advanced. For the obviously incurable, far-advanced cases the "open-air cure" is not applicable. Such need only comfortable care while they drag out their weary days, either in a consumptive hospital or at home. Infinitely pathetic is the slow and steady march to the grave of the advanced consumptive, and one cannot be too patient and tender with such unfortunate ones.

Furthermore, in speaking of tuberculosis in relation to treatment, I am, of course, referring to *clinical* tuberculosis, which has symptoms of toxemia, such as fever, tachycardia, cough, loss of weight and strength, etc., not of *anatomical* tuberculosis, so called, in which the physical examination indicates some tuberculous infiltration, but without activity as indicated by symptoms. The individual is in no way ill, and consequently needs no treatment. Probably most of us are more or less in this latter category. As I have said above, a large number of active tuberculous persons must be treated at their homes if treated at all; for, in the first place, there are not sanatorium accommodations for but a minority, and in the second place, many will not or cannot go to an institution, for various reasons. Moreover, home treatment, if conducted by a conscientious and painstaking physician, with the coöperation of the patient, will, in many cases at least, produce quite as good results as sanatorium treatment, and sometimes better.

The present-day treatment of tuberculosis is essentially hygienic,—rest, diet, fresh air, and the prompt correction of any complications are the four basic elements. What is almost equally important, but not always sufficiently appreciated, is the psychological element in the treatment, and herein is the preëminent value of the inspiring physician, whether in the sanatorium or in home treatment; hope, faith, courage, peace of mind, are most essential for a successful conduct of the treatment, and the true tuberculosis physician must inspire his patients with these virtues. The late Doctors Trudeau of Saranac and King of the Loomis Sanatorium were striking examples of this kind of a physician.

To treat a case successfully at home requires a careful and painstaking arrangement of all the details by the physician. He must arrange the diet, make out the menu, assure himself that the proper amount of food is taken; arrange the room for sleeping or, better, a sleeping-porch, which can often be inexpensively done. If there is an afternoon temperature, he must keep the patient at rest and, when possible, have a nurse, as with other bed patients. Later, when the time for exercise has come, he must carefully arrange and supervise that, both as to the kind and amount. The physician must, so to speak, hold a weekly or periodic class with his patient and go over the previous period's record, and hence a record of the pulse, temperature, rest, amount of food taken, time spent in the open air, and whatever other details the physician may desire should be kept by the patient, nurse or attendant. Of course, the proper disposal of the sputum must be insisted upon and the patient instructed as to safe coughing. The other members of the household must be instructed as to their duty towards the patient, and given an intelligent understanding of the situation. All the members of the household should be examined, for they are "contacts." With an enthusiastic, painstaking physician, who possesses the confidence of his patient, and who is willing to devote the time for a proper and complete management of the case, and with the intelligent coöperation of the patient and other members of the household, I believe a case of tuberculosis can be perfectly well treated at home, as I have before said.

*The Dispensary.* The principal rôle of the dispensary is in making the diagnosis and arranging for the treatment of the tuberculous patient, either by his own physician at home, or in a sanatorium or hospital. I do not believe that it is the province of the dispensary to treat its tuberculous patients, nor can it satisfactorily do so. If, however, it does assume treatment, as it sometimes seems compelled to do, it must proceed upon much the same plan as I have outlined for the private physician. The home of the patient should be visited by the dispensary physician or visiting nurse, proper arrangements devised for fresh air both day and night, the diet arranged, and, in brief, all the details of the treatment. At least once a week the patient, if an ambulatory case, should report at the dispensary for a review of the previous week, and to receive whatever new instructions

are necessary. In fact, the dispensary, when it does attempt treatment, must proceed upon much the same plan as the well-known "Class Method" so successfully developed by Dr. Pratt.

*The Sanatorium.* The sanatorium is only a large home, so to speak, especially designed and equipped for the special purpose of treating this single disease with medical service trained in tuberculosis work. The same general plan of treatment is followed as I have outlined for the home,—fresh air, proper and abundant food, rest—complete in fever cases—and supervised exercise, when the time for exercise comes. There are, however, certain obvious advantages which the sanatorium possesses which do not or may not exist in the home treatment:

*First.* The sanatorium is established in a supposedly favorable location as to climate, situation, protection from wind, etc. If a state sanatorium, it is situated in the best available location in the state in regard to climate, purity of air, etc.

*Second.* A skilled physician is always at hand for any emergency, such as hemorrhage or any sudden complication.

*Third.* When a dietitian is employed, as is the case in most large sanatoria, the diet as to food values can be arranged more scientifically.

*Fourth.* Certain specific forms of treatment, as the use of tuberculin or the employment of artificial pneumothorax, can only, or best, be carried out in an institution where physicians are experienced in these methods of treatment.

*Fifth.* Better discipline can often be maintained, especially with certain patients of weak will-power, and lapses from the rigidity of the routine treatment are avoided. Indeed, with a patient of little self-control the sanatorium is the only place which offers any prospect of successful treatment.

*Sixth.* The example of others all doing the same thing—taking the "cure"—makes it easier to follow out the treatment, and encourages one to do so when he sees the benefit of it in others.

With all its advantages, the sanatorium is also not without disadvantages. In the first place, when a large number of patients are treated *en masse* there is, of necessity, a certain rigidity in the treatment. Each patient cannot be individualized as in home treatment, or receive so much personal attention from the sanatorium physician. Again, he may not be able to obtain just the kind of food he has been accus-

tomed to at home, and with certain nationalities this means much. There is also a monotony of diets, which tends to loss of appetite. The companionship may not always be agreeable, and, on the other hand, loneliness and homesickness may depress one. In general, there are the annoyances and disadvantages incident to any institutional life, be it in a hospital or sanatorium. Some patients will never do well in a sanatorium, while for others it is the only place which offers a reasonable hope of arrest.

*The Consumptive Hospital.* The consumptive hospital is quite a different institution from the sanatorium. It is, primarily and chiefly, intended for advanced cases, and its principal duty is to afford these poor patients comfortable care while they live. In my opinion no such equipment for open-air life is necessary as in a sanatorium. Warm, well ventilated wards are the essential thing. The consumptive hospital as a permanency is comparable to the reception hospital in connection with a sanatorium where patients are temporarily placed for observation or for the treatment of acute symptoms. Even though advanced and apparently hopeless, some cases will so far regain their resistance as to be enabled to lead a comfortable existence and do a certain amount of work. Some will even achieve a genuine arrest, with a large amount of fibrosis, to be sure, which will prevent any strenuous exertion but which will allow a limited activity. There are at present many examples of the consumptive hospital in this state, as all cities above a certain number of inhabitants are obliged by law to provide them. In Europe the general hospitals admit such cases. The poor, advanced consumptive has almost infinite troubles and distresses of one kind or another, and needs all the care and sympathy we can give him, for his condition is a lamentable one indeed. He is often the most grateful of patients, though sometimes he is also the most incessant and imperative in his demands. In brief, the main treatment in a consumptive hospital for advanced, hopeless cases is everything and anything which will make the patient comfortable and mitigate his sufferings and weariness.

*Diet, Rest, Fresh Air, Exercise.* As has been said above, the basic principles of treatment are the same whether at home or in a sanatorium, and to repeat, they are, first, a painstaking and constant supervision by the physician, who should arrange all the details of the

new life of the patient. "A masterful arrangement on the part of the doctor," as Osler puts it. Diet, rest, sunshine and fresh air, and exercise when permissible. When treated at home it is well to have the patient keep a daily record of his temperature and such other details as the physician may desire. As to diet, if the digestion is normal, three good meals a day of a mixed diet, with an added amount of fat and carbohydrates if the patient is below weight, as he generally is, will suffice. I insist upon a liberal amount of bread and butter and a glass of milk with every meal. If the patient cannot take the three ample meals, lunches between meals are to be added to make up the deficiency, such as milk and eggs, broth, cocoa, or anything nutritious that he can be persuaded to take. In many cases the physician will have to arrange the daily menu in order to be certain that his patient gets the right kind and amount of nourishing food. "My kitchen is my pharmacy," is the oft-quoted saying of Dettweiler. In general, the average tuberculous patient needs from 500 to 700 calories of proteids, 1200 to 1500 calories of carbohydrates, and 1300 to 1500 calories of fats. Very admirable charts have been prepared by the United States Department of Agriculture, indicating pictorially the food values of the different articles of diet, so that one can see at a glance the amount of proteids, carbohydrates and fats any article of food contains, from a banana to a herring. If digestive disturbances exist these must receive proper attention, and the diet modified in such a way as can be digested and assimilated. One must ever bear in mind that "a consumptive who does not eat is doomed," and that his stomach is one of the toughest organs in his body. If the physician does not go to the extent of arranging the daily menu he can give a list of nutritious and proper foods from which to make a selection.

**Rest.** During the whole course of the treatment rest must hold a predominant place. If there is fever, an afternoon temperature above 99.5°, the rest is to be absolute as in any other active infection, and when possible this rest should be in the open air, as in a sleeping porch. If there is no rise of temperature, there should still be rest a considerable portion of the day, but not bed rest, and the night's sleep should be long. Dr. Pratt is the energetic exponent of complete rest throughout the whole course of the treatment. Few, however, I think, are disposed to go as far as that, but would rather agree with

Dr. Baldwin in his admirable statement of the great principles of treatment in his recent address before this Club, namely, "*regulated exercise during convalescence or quiescence of the disease.*" If the patient is kept at rest during the long months, or it may be years, of his treatment, his morale may become so enfeebled that he may never dare to resume his place as an active member of the community again. He may effect his cure, but in doing so he has destroyed his usefulness. Those of us who see much of tuberculosis are familiar with such unfortunate cases. At the commencement of the treatment, even if there is no fever, it is a wise rule to keep the patient at absolute rest for two weeks; for in this way, the physician can get a better idea of the resistance and recuperative powers of his patient. One can never do harm by insisting upon much rest, and when in doubt it is safest to prescribe rest. Before the treatment of tuberculosis had become so standardized as it is now, the significance of rest in the active stage of the disease, when there was fever, was not fully appreciated, strange as it may seem, for in other acute infections it was recognized that complete rest was the foundation of all treatment. Undoubtedly, in consequence, many lost their chance of recovery by exercising while there was fever, and at the present time it is to be feared that not all physicians fully realize the supreme importance of "rest when fever"—*absolute rest.*

**Fresh Air.** If possible, a sleeping porch or the protected corner of a piazza should be arranged for outdoor sleeping, although a large, airy room with several windows, and which has had the sunshine during the day, is, in many cases, a satisfactory substitute. With a little ingenuity on the part of the physician, an inexpensive sleeping porch can generally be devised. The National Association for the Study and Prevention of Tuberculosis has issued a little pamphlet illustrating many simple appliances for outdoor sleeping. It is noteworthy how readily most persons adapt themselves to outdoor sleeping, if properly protected and their feet are warm, for one cannot sleep with cold feet. There must be protection from the wind, and if the patient is awakened early by the morning light, a band or a long stocking can be tied over the eyes. Of bed clothes, the best plan is to have a good part of them upon the patient himself, in the form of woolen underclothes, thick pajamas, woolen stockings, a knit



helmet for the head. Newspapers placed under the mattress will shut out the wind from below. When one has once become accustomed to outdoor sleeping he is never quite satisfied to sleep indoors again, for he finds the open-air sleep so much more refreshing. One should, however, dress and undress in a warm room.

*Exercise.* This subject has already been referred to, but it is of such vital importance to have a clear understanding of it that repetition will not be amiss. No exercise while there is fever. When, however, fever has disappeared and all the symptoms are improving, the weight and strength increasing, cough and expectoration diminishing, carefully regulated exercise may be begun, and if there is no reaction it can gradually be increased. If, on the contrary, there is evidence of a reaction after the exercise, as indicated by a rise of temperature a half hour or an hour later, with headache and a general feeling of malaise, the exercise must be omitted for a few days or lessened.

It is of extreme importance that the exercise should be carefully prescribed, both as to kind and time, and constantly supervised; for example, so many holes of golf, so long a walk, so much garden work, and with so much expenditure of energy, and for a definite period of time. is the careful plan and regulation of exercise pursued at the Loomis Sanatorium. Reference has already been made to the Pratt method, of no exercise during the whole course of the treatment. Dettweiler of Falkenstein also introduced this plan of continuous rest. The results, it must be confessed, are excellent, but, nevertheless, I am of the opinion that regulated exercise at the proper period of the treatment, when all the symptoms are improving, produces equally good results, and, moreover, prepares the patient to resume his work when the arrest is accomplished. As to gymnastic and breathing exercises, advocated by some, I do not believe they are usually advisable or are of any especial value, and they may do harm. All violent exercise, such as a violent game of tennis, should, of course, be avoided. It is well to remember that more patients injure themselves by too much exercise than by too little. It is a very inadequate comprehension of the subject of exercise for the tuberculous individual, to say, "Take a little exercise"; the kind, the amount, and the time should all be carefully prescribed.

*The Cold Bath.* The cold morning bath is good for some patients and bad for others and

should, therefore, not be ordered indiscriminately. If the patient is fairly robust and has a good resistance, the cold bath will act as a tonic, and is a useful adjunct to the treatment. If, on the contrary, the patient is slow to react, feels chilly for some time after the bath, and has a feeling of depression rather than of invigoration, the bath should either be omitted or gradually begun, first with warm water or dry rubbing, and then with the wet pack or cooler water until a temperature of 60° F. can be endured without discomfort or lack of prompt reaction. There are many simple methods of taking the cold bath; all that is actually necessary is a washcloth or large sponge, a bowl of water to which a little sea salt may be added, and a coarse towel. If, for any reason, the cold bath is not considered applicable for the whole body, it can be applied to the neck and chest.

*Clothing.* No more clothing should be worn than is sufficient for comfort. Generally the tuberculous patient will require rather more warm clothing than the normal person, but an excessive amount, especially about the chest, is unnecessary and debilitating. It is a popular belief, or was, that the consumptive must be heavily clothed, and one often meets with examples of this erroneous idea. Increased bodily production of heat by increased bodily energy is the essential means of keeping comfortably warm, not by excessive clothing. For outdoor life, a pair of arctics, with thick woolen stockings and a fur- or woolen-lined overcoat, or one of leather, will render one comfortable in cold weather. One can dress in the same way and sit by an open window when, for any reason, he cannot be out of doors.

It will be seen from this hasty review of the treatment of curable cases of tuberculosis that the fundamental principles of treatment are few and simple, but their successful application requires careful, painstaking, and constant attention to the many details involved, and an individualization of each patient.

The descent to active tuberculosis is a slow and insidious one, and the ascent to health again is often equally slow, and demands patience and fortitude on the part of the patient, and unremitting care on the part of the physician.

BOWDOIN MEDICAL SCHOOL GRADUATION.—Report from Portland, Me., states that the annual graduation exercises of a class of 18 were held at the Bowdoin Medical School on March 2—three months in advance of the usual time.

## SOME MODERN MEDICAL PROBLEMS.\*

BY TIMOTHY LEARY, M.D., BOSTON.

THE War Lord, using Christianity as a shield, while invoking the Pagan gods, has let loose upon the world a war which has wiped out at one stroke the progress of centuries of civilization. Pursuant to the Pagan practices, millions of human beings have been subjected to violence and death, international law is made a subject for mockery, treaties have become scraps of paper, deceit and rapine and the slavery and slaughter of innocents have replaced the Christian standards. We have reverted to the primitive conditions of the Pagan period.

How great this reversion has been is illustrated by the old but new medical problems of the present war.

The war is being fought underground on the Western front, in the most fertile terrain of Europe. This garden of the world owed its fruitfulness to high fertilization with manure, and to the moisture of the climate. The trenches in which fighting is being carried on, dug through this rich ground, are converted into veritable sewers by the continuous rainfall.

We were proud of the fact that advances in bacteriology had made the world clean, surgically, even in war. The conditions of trench warfare have reversed this picture, and we are carried back to the days of Ambroise Paré or beyond. Clean wounds are the exception, and not the rule. The bacteriology of the wounds is actually that of sewage. Instead of clean-cut rifle wounds, lacerated and contused wounds, due to shrapnel or that weapon of the barbaric period, the trench bomb, are most commonly met with. The driving of sewage-soaked clothing into the wounds, by fragments of shrapnel and bomb casing, results in a high percentage of infections with the gas bacillus, derived, perhaps, from the putrefying bodies of the unburied dead.

The fire pots and winged fire of the ancients have again come into use and the stink-pots are represented by deadly gases, which cauterize the mucous membranes as with a flame. The use of high explosive shells has resulted in a new phenomenon,—shell shock,—visited often on those so remote from the bursting shell that external injuries are slight, if any; marked in

fatal cases by minute hemorrhages into the brain, and in the living, by manifestations, perhaps partly neurasthenic or hysterical, of minds literally shaken from their foundations.

Another new but old lesion is the so-called trench foot. Thought in the beginning of the war to be due to freezing of the feet, it is now agreed to be a neuro-vascular phenomenon, favored by varicosities or other disturbances of the circulation, and due to the long exposure, in tight boots, without ventilation, in the water of the trenches. It is interesting to note that Larrey, Napoleon's great surgeon, recognized during the Napoleonic wars that this phenomenon did not arise during periods of freezing, but appeared after the exposure of men to continuous wet and cold, when opportunity for change of footwear did not present.

The necessarily intimate association of human beings in masses in the trenches and dug-outs, with infrequent opportunity for bathing or change of clothing, has given rise to universal infestation with that too familiar friend of mankind,—the body louse, or the "cootie" of trench slang. The cootie is the carrier of typhus fever, which the allied forces have largely escaped, not because of the absence of lice, but because the troops as a whole come from countries where typhus has largely disappeared with the louse, as a result of the practice of personal cleanliness. On the Eastern and Southern fronts, louse transfer has been followed by epidemics of typhus, originating in the endemic centers of the disease, the lands of the annual bath,—Serbia, Bulgaria, Russia and Turkey.

Another pest of the underworld, the rat, is able to flourish under trench conditions. This animal with other rodents, such as the field vole, is a carrier of a group of spirochetæ, which recent observations in Japan, where from the nature of the habitations rat infestation is common, have shown to be the pathogenic agents producing rat-bite fever and infectious jaundice. The obscure trench fevers and trench nephritis are accompanied by the presence of spirochetæ resembling those found in rodents, and it is probable that these rat parasites, transmitted either by biting, or by the contamination of food with rat excreta, are causal agents of these diseases.

These problems are not new, except to our civilization. We are afflicted with the plagues of the cave dwellers.

The truly newer problems we have met and

\* Address delivered to the Graduating Class of the Tufts College Medical School Feb. 6, 1918.

are solving. Though religion has faltered and justice has failed; though our boasted efficiency has miscarried, there is one service in every army which has met all requirements, and has had no explanations or apologies to offer.

President Eliot said, in May, 1917:

"In the present crisis in the life of the American people, the medical profession cannot but rejoice that it was better prepared for war service than any other profession in the country, including the military and naval profession. It was prepared to apply every medical and surgical invention of the last fifty years at once for the benefit of the Army and Navy. It did apply inoculation for typhoid, and conducted a successful resistance to typhus. It was already preventing yellow fever, and curing and preventing hookworm disease and malaria. It promptly demonstrated that surgery was something more than cutting off and cutting out—it could rectify and repair. It could make immediate application in war of the recently discovered improvements in orthopedic and dental surgery. The first aid which America was able to give to the European combatants was medical aid. This country is not ready yet to give effective military or naval aid; but we were ready to send in the first year of the war doctors, surgeons, nurses and orderlies by the thousand, thoroughly prepared to render efficient service at the great hospitals at the front or in the rear. In war as in peace, the medical profession has shown itself to be thoroughly altruistic, beneficent and self-sacrificing."

Lloyd George has said:

"When you come to the Medical Service,—the men and the women,—they have never shown greater courage, knowledge and experience. Thousands of them have devoted themselves—devotion is the word—to the curing of the wounded and the healing of the sick. We owe our thanks to the medical profession. They have suffered; hundreds have been killed and many more hundreds wounded."

Earl Curzon, also in moving a vote of thanks to the British forces, made the following statement:

"There has never been an army that has been in such a state of health as the British Army in France. In other wars disease has often proved more fatal than the guns of the enemy. We remember it in the Crimea. There were even some sad stories in South Africa. But in this war the health of the army in the field has actually been better than that of the civilian population at home. It has been better than the health of the army in times of peace, and,

paradoxical as it may seem, the British Army in France has really been a sanitarium for the British citizen."

Our own experience is similar. Though much publicity has been given to inadequate camp and hospital conditions, due to deficiencies of the quartermaster service, the fact remains that the mortality from disease among our troops is but a fraction of the mortality among our civilian population. The principal menaces to health have been epidemics of pneumonia, meningitis, and measles. The first two, which furnish a considerable mortality record, will be controlled, I venture to prophesy, by prophylactic vaccination.

All of you who are physically fit will go automatically into the service of your country. It will be your duty, as a part of the great medical services, to deal with the problems for which civil life has prepared you, and with the new old problems which I have cited, and others which may arise.

Your duties will not end there. It is the glorious function of your profession to serve as the great salvage corps, for the restoring to humanity of the derelict fragments of human beings, whom war has crippled in body or mind, but not destroyed. The crippled veteran of previous wars has been permitted to drag out an existence, unhappy though pensioned, a salaried pauper, dependent on the charity of the community and serving no useful purpose. The crippled veteran of this war will, as the result of organized effort for his reconstruction and rehabilitation, be given every opportunity to prepare himself for work adapted to his physical disability, and so will be able to serve some useful purpose in civil life. In other words, he will be given back not only his body, but his independence of mind and soul, as far as is possible.

On your return at the end of the war, with added experience and ripened wisdom, with an outlook broadened and chastened by contact with suffering humanity, you will have several options offered you.

Those of you who are adventurous may have a hand in the spreading of civilization to new lands. The world has so shrunk that the conquest of the savage and uninhabited portions of the globe has become a purely medical problem. The civilization of the Congo and Eastern, Western and Central Africa, of the wilds of South America, in a word, of the unredeemed

portions of the world's surface, is no longer a question of men, or money, or transportation or hostile tribes, but of disease, which paralyzes the forces of the white man.

The insuperable difficulties which met the French effort to build the Panama Canal, were not due to lack of engineering skill, nor of money to carry out the enterprise, but arose because the workers were killed off by disease faster than their successors could be supplied. This, the principal obstacle to success, was overcome by the destruction of the insect carriers of disease, according to methods whose efficacy was demonstrated by Gorgas, following the discoveries of Reed, Carroll, Lazear and Agramonte,—methods which have made the harbors of Cuba, the Spanish Main, Brazil, and the Western Tropics safe ports of call at all seasons, for the first time in their history. The Panama Canal is a monument to the efficiency of medical research.

If you should choose a life of adventure in the advancing of civilization in the wilds, you may be called upon to walk alone and unafraid into the valley of the shadow of death; to exhibit a form of courage which men with other training rarely show. As an example in point, immediately following the Spanish-American War, the city of Santiago was garrisoned by the men who fought at Caney. No man who has looked upon that naked sugarloaf, crowned with its blockhouse, can for a moment doubt the courage of the troops who stormed and took it. And yet, when yellow fever appeared in the city, the withdrawal of these troops took on the nature of a flight, and faces blanched with fear were in evidence. These men had shown their bravery in the face of Spanish bullets—but bullets are tangible things. This unseen death, creeping in the dark upon its victims, caused by an agent which human eye cannot see, even with the aid of the microscope, converting human beings into loathsome objects to be isolated from their kind and, if death comes, to be thrust hastily into the ground, without the pomp and panoply of war, might well give them pause. To charge into a storm of bullets, with Hotspur enthusiasm for the fray, and the shouts of comrades in one's ears, is one thing, but to face alone in cold blood the unseen death, is another.

It is the duty of your profession to meet and solve these problems, and thus make safe the unreclaimed portions of the world for the white man and his civilization.

Another choice which will be offered you for your life work is entrance into one of the public services. The Army, the Navy and the Public Health Services of the National Government, even before the war, had grown with our expansion into a world power. To the credit of the Army Medical Corps is to be placed the solution of the yellow fever problem, the recognition of hookworm disease as the cause of tropical anemia, and the first adequate demonstration of the control of typhoid infection by prophylactic vaccination. The Medical Corps of the Navy has advanced our knowledge of tropical diseases, and has demonstrated the value of prophylaxis in the checking of venereal infection. The Public Health Service has added to our information on anaphylaxis, the etiology of measles, the eradication of vermin, and the control of bubonic plague and cholera. This service is the watchdog of our ports, obtaining first-hand knowledge of the plagues which beset foreign countries, and guarding our shores from their invasion. It meets and administers internal problems arising from infection, where the local health authorities are imperfectly equipped, or where the country at large is placed in jeopardy from a new or unusual danger. The Public Health Service has worked with the Rockefeller Foundation in curbing the spread of hookworm disease.

We are slowly realizing that the child—our chief asset—can be converted into a liability or its value as an asset increased, depending upon the care which we are willing or able to expend upon it. In older civilizations, and in our own until a recent period, the welfare of the child was a responsibility of the family alone. The socialization of education led to the disclosure that efforts to develop a mind were seriously handicapped unless that mind occupied a body which was healthy. Nowhere has the influence of bodily state on the mind been more clearly demonstrated than in our Southern country, where the offspring of an intelligent, adventurous race have been converted into feeble-bodied and feeble-minded paupers, "poor white trash," by the ravages of the hookworm.

The arousing of legislators to the necessity of caring for such problems is slow, because legislatures reflect the attitude of the public. The training of the public to think nationally, or, better, socially, instead of selfishly or parochially, is a long and weary task. The pioneer thinkers, whose training in medicine brings

home to them first the national or international character of these problems and their solution, are able more readily to awaken the minds of the few to the necessities of the situation. As a result, there have arisen a series of quasi-public foundations, supported by private funds, which have taken up for the time the burdens which ultimately the public must bear. The bronze doors of the Forsyth Infirmary for Children symbolize the evolution we are undergoing. One door, illustrating primitive motherhood, is titled, "The Mother, Giver of Life and Love"; the other, expressing the modern concept of our responsibilities, is inscribed, "The Commonwealth, Giver of Health and Learning."

The lesson we are here to teach is that the care of the public health is a public function, and that many of the disease problems which were thought to be private and personal, or, at most, municipal or territorial, are national or international in their significance. No better example could be supplied than that furnished by hookworm disease in our own lands. Thought at first to be a purely local problem in Porto Rico, investigations have shown that infection with this pest has spread widely throughout our Southern country and the Philippines, and the results of treatment according to the teachings of Ashford, are giving rise to a virtually new birth of a nation.

The prejudices we have inherited from our forebears have led us to adopt an attitude toward certain diseases which is absurd in the light of modern knowledge. We shun and isolate the sufferer from leprosy, a disease which is transmitted only through long and intimate contact, but we allow in many states the man with advanced tuberculosis, who is expectorating billions of tubercle bacilli every day, his complete freedom. Worse than that, we permit the individual infected with syphilis to walk the streets unrestrained, to work in our shops, to eat in our restaurants and to enter our homes. Syphilis is a disease usually lacking the spectacular external manifestations which brand the leper, but due to a parasite so ready for transfer to a new host, and so superficially placed in many of the hidden lesions that mere momentary contact, and indeed indirect contact, by means of a drinking cup, for instance, may suffice to mark a new victim.

The mantle of personal privacy, which has cloaked and favored the spread of this disease, is being lifted by the demands of an enlight-

ened public opinion. It will be a part of your duty to make plain to the world that no man has a right to inflict disease upon his neighbor, knowingly or through ignorance. The public must learn that investigations with reference to the so-called private diseases, and treatment of the individual for the protection of the many, are no more invasions of personal liberty than is the law which prohibits the property owner from building a fire trap, on land which he owns, in the restricted districts of a city. If the lesions of syphilis, or gonorrhea, were as visible on the surface as are those of the leper, there would be no need of debate or instruction in this subject.

Activity in the control of these plagues was never more needed than now, when we are at war. The Wassermann test has shocked us with its revelations of the universal spread of syphilis among our people. But, if German, French and English experiences are a criterion, we may expect a tremendous increase in its prevalence, following the return of our troops. Men who are freed in mass from the restraints and influences of home life are prone to develop the mob spirit, and tend to cast aside the teachings of religion and civilization and even common sense. So that, while we look upon our men as superior to the common lot, while religion and discipline and pride in clean living and self-restraint will serve to save many from exposure, we may expect a large addition to the number of our infected, with the closing of the war.

State and municipal health boards are preparing to assist the profession and the public in the discovery, treatment and continued observation of these cases. So important is the specific treatment of syphilis with the Ehrlich preparation, that the German patent rights have been withdrawn, and it is the purpose of several state health boards, including that of Massachusetts, to manufacture the preparation, and turn it over to the profession at cost, or free of charge, in needy cases.

The broadening of the scope of state and municipal health boards, in both preventive and corrective medicine, has developed the need of men with special training, and opportunities in this respect will open to those of you who will have seen special service in sanitation abroad, or who take added instruction on your return.

In industry in this country in times of peace, there has been a daily toll of injury, disease and death, comparable to the highest records of war.

The old attitude of the employer is illustrated by an experience which I had several years ago. A structural steel workman had missed his footing and gone crashing down, through a building under construction, to his death. He died without relatives or friends. When I called up the large corporation which employed him, and inquired who would care for the burial of the body, I was told, "Let the city bury him." When I replied that I would furnish all of the facts to the newspapers, there was a prompt change in the atmosphere, and the corporation was eager to take up the duty of caring for its dead. Here was a man the nature of whose work required a constant mental and physical alertness during sixty seconds of every minute of his working day. One lapse or one miscalculation by himself or his fellow workmen, and his end might come. So great were the risks he took, that insurance companies would furnish protection only for exorbitant fees. If his injuries had not been fatal he could not have sued successfully for compensation during recovery, because his rights were hedged about with "willing assumption of risk" and "fellow servant" clauses which would effectually have barred him.

We have changed all this. Industries are required by law to assume responsibility, as a proper charge upon the industry, for those who become injured or diseased or who die as the result of their employment.

Employers have come to realize that they have a financial interest in the trained workman, whose protection from accident and disease is as important as the conservation of their other assets. There has developed as a result of this attitude of employers, a new branch of medical activity, having to do with the investigation of the causes of industrial accidents and industrial diseases and their removal.

In connection with the treatment of industrial accidents, public commissions have for the first time been empowered to dictate, by authority of the law, the amount of compensation which shall be paid to physicians for the care of their private patients who have suffered industrial accidents, whether the treatment be carried out in hospitals or in the privacy of the home.

In England, where lodge practice is common, the establishment of old-age pensions and health insurance has been followed by a demand for the socialization of the medical profession, as a public service. Whether the wave of socialism

now gathering in Russia and penetrating Germany, will engulf England, as Henderson suggests, is a question, but one of the inevitable results of its success will be the conversion of your profession from its present semi-public position to that of a purely public service.

However, present indications are that when you return from war duty, if you do not enter one of the public services, you will be given opportunity to go into the private practice of medicine. You will be surprised, if you have not during student life observed this peculiar situation, to note the value which the public will place on your services, as measured in dollars and cents.

The spectacular character and the brilliant results of modern surgery, and the prompt improvement of patients following many surgical operations, is followed equally promptly by generous reimbursement of the surgeon by the grateful patient. This is a technical age, and men with technical ability are highly paid. The over-appreciation of the technical has naturally led to a surplus of operators, many of whom are not surgeons in the true sense of the term. The application of efficiency tests to the end-results obtained, as suggested by Codman, should ultimately serve to eliminate the unfit.

Internal medicine, requiring greater basic ability in the man who would be its master than is demanded of men in the more showy branch, pays its devotees less generously than does surgery. The thermometer, the stethoscope, and the test tube are less impressive than the scalpel, and results are usually slow and gradual, in contrast to the sudden relief which frequently follows surgical intervention.

You may be attracted to one of the specialties, in which case you will probably be highly paid. You will pick out some limited field of medicine, after perhaps several years in general practice, and as you narrow your field, the public will evince its appreciation by widening the mouth of its pocketbook.

The surgeon and the specialist are the magnates of the profession. I had in my hands a few days ago a pathetic piece of evidence in this respect. Jenner, the discoverer of vaccination, had printed a circular letter of information to the profession, describing the then new procedure of vaccination. The particular copy which I saw had been sent to Sir Astley Cooper, the most famous fashionable surgeon of his day, whose income is said to have exceeded twenty

thousand pounds per annum. The interesting feature of this copy lay in a postscript over Jenner's signature, in which he apologized for daring to take the valuable time of the great man for the reading of his circular. Time's measure of the relative greatness of the men is indicated by the fact that Cooper's name is not thought of sufficient importance to appear in the *Century Dictionary*.

Another example of the humility of greatness is found in the story of Metchnikoff, who, while the scientific world watched the struggle for supremacy between his cellular theory and Ehrlich's humoral theory of immunity, the most masterly discussion in modern medical history, received from the Pasteur Institute, I am informed, an annual salary of three thousand francs or six hundred dollars.

The predatory classes, always on the lookout for easy money, have seen an opportunity for gain in the readiness of the public to pay the specialist generously for services. Most of the quack practitioners, therefore, advertise themselves as specialists, and you will see even subdivisions of the specialties, particularly the easy and safe branches dealing wholly with chronic conditions, erected to the dignity of cults, and, backed by abundant funds and lobbies, wringing recognition from legislatures for their so-called schools and so-called degrees.

The neurotics and the neurasthenics, the people who are self-centered to the point where they focus all of their energies on their internal mechanism, to its and their own discomfort; the people who have nothing to do, no external interests, no concern or sympathy for others and no charity,—will go out of your hands into those of the various cults, or will join the Religion of the Selfish, to your financial loss; for the selfish are usually well to do, as was discovered by that astute psychologist, Mary Baker Eddy.

With them, unfortunately, will go a group of sufferers from real diseases, whose diabetes or renal disease, lacking restraints in diet, will rapidly progress; whose tuberculosis will advance from hopeful to hopeless; whose new growth will show the inevitable extension from the operable to the inoperable stage.

You will not be robbed of the poor by the disciples of the various pseudo-medical cults, to whom charity is unknown, and whose methods of treatment(?) are intended to apply only to those who can pay for services rendered.

Most of you will, at least in the beginning, go into the general practice of medicine, the most poorly paid and most highly valued medical service which is offered to the public. General practice is criticized because many general practitioners are content to rest on their laurels, and do not keep pace with the growth of the profession. They serve only as sign-posts for the various specialists. The general practitioner whom the world admires is the man who, in spite of his small income and his long days, finds money for the purchase of medical books and journals, and time to read and digest them; who impresses the specialist, called in for unusual cases, by the accuracy of his observations, the intelligence of his diagnosis, and the up-to-date character of his methods; who is the valued guide, counsellor and friend of a countryside.

That eminent medical publicist, Dr. Richard Cabot, has said that the general practitioner must go. But what is the world to do without him? He is the medical "man in the trenches." He is called to meet at first hand the emergencies of life and death. He it is who makes plain to the amateur graduate of a first-aid course, that a seidlitz powder is a deadly thing to offer to the man whose heart is struggling through an attack of acute insufficiency, masked by symptoms of indigestion. His is the burden of coaxing back to efficient service the recalcitrant organs which are groaning under the emergency load they are carrying. His intimate knowledge of the family affairs makes him appreciate that in saving the wage-earner, he is protecting the family from a life of pauperism, with all that that means.

It is the duty of the profession not to eliminate the general practitioner, but to make more easy his pathway to progress by establishing local or county centers, with laboratory and library facilities in charge of trained medical observers, who will solve his unusual laboratory problems, helping him in searching the literature, and refer him to specialists who are willing to assist when the center authorities are at a loss. According to Professor Winslow's reports, even Russia has progressed further in this direction than we have. The recently established consulting clinic at the Massachusetts General Hospital is a local step in the right direction, but, even with the limited distances to be travelled in our State, is not readily accessible to many of our practitioners. Perhaps travelling consulting clinics, with fixed days of call



at county centers, would overcome the difficulties of the present situation.

Whatever the solution may be, I am loath to believe that the world can dispense with the general practitioner's services, either now or in the future. He is, or should be, the embodiment of all of the qualities which have caused the world to call your profession blessed.

And now, a word of counsel to you, as individuals.

My advice to you in the selection of a location in which to practise, is to pick out the place in which you want to live out your life, and make yourself worthy to deserve the admiration and welcome of your neighbors.

As for your future, to paraphrase Ruskin:

If it is love and an abiding faith in mankind; if it is willingness to subordinate self to the needs of others; if it is realization of the responsibilities you have accepted and purpose to keep yourself ever fit and ready to discharge them worthily, that move you; then the Spirit is upon you, and the world is yours, and the fulness thereof.

It is my high privilege to welcome you to full membership in the medical profession, and to bestow on you the benediction of your Alma Mater. May God bless and speed you in your work.

### Original Articles.

#### REVISED IDEAS CONCERNING FOOT DEFECTS AND ORTHOPEDIC FOOTWEAR.

BY HERMAN W. MARSHALL, M.D., BOSTON.

THE last word concerning common foot ailments has not been said yet, although too much to be comprehended readily has been recorded at the present time. There has been a deluge of special information from civil and military orthopedic surgeons, shoemakers and shoe-fitters, each pointing out many important details; but there still remains much to be done in piecing together scattered facts into a simplified, harmonious conception of the entire subject.

Furthermore, certain familiar details increase in significance with time; while other well-known facts lose some of the prominence they held when first brought to notice; and accordingly, there is a need now for sorting over our various and numerous data. The writer, in puzzling over innumerable details of the subject, has picked out special points which he thinks should

be emphasized again, although many of them are familiar; and, because of their diversity, they will be presented here to the attention by listing them without trying to elucidate all their complex inter-relationships.

1. *Feet are plastic* and can be moulded gradually into many different forms, especially during earlier years of life, before bones become completely hardened. Illustrations are seen in feet deformed by the old Chinese custom of binding down the toes continuously during the growing period; also in the modern custom of wearing shoes that are too short, with pointed toes and high heels, until feet become contracted, and longitudinal arches are forced abnormally high, while anterior arches become depressed and toes deformed; or thirdly in beneficial regulations of growth by means of plaster casts and strappings in congenitally deformed feet whereby they are restricted in a way that produces more normal shapes as patients grow older.

Bones which have become completely ossified still undergo slow changes; and there is a constant turning over of the lime constituents of bone, some of the lime being eliminated continually, while simultaneously some is being laid down anew. In this way the internal structure of cancellous bone slowly accommodates itself to its shifting mechanical needs. Certain internal trabeculae become thickened and strengthened, others become thinned from absorption, and slight, slow, adaptive changes in bony shapes result from time to time, even in adults.

2. *Foot deformities are produced most commonly by continuous wear of one style of shoes.* Other less common causes include congenital defects, deformities produced by bone diseases and tumors, anterior poliomyelitis and other nervous affections, and various kinds of chronic arthritis.

3. *Results of causes operating previously for prolonged periods are shown by these most common foot deformities;* and the latter should not be interpreted primarily as causes for existing pains or weaknesses complained of; for an extremely large percentage of them are not associated with pain, and such feet are serviceable enough for ordinary requirements of life.

4. *Causes of abnormal weakness, pain, and disability are found most commonly in musculo-ligamentous weaknesses, strains or irritations.* Other causes for abnormal symptoms include

lesions of bones, joint linings, tendon sheaths, nervous structures and skin.

5. *Sharp distinctions in treatment of foot defects should be made between abnormal symptoms and foot deformities.* Both occur together very frequently, yet there may be marked defects of structure without musculo-ligamentous weakness; or, vice versa, there may be severe pain and weakness with very little deformity. Errors observed in treatment frequently are those of emphasizing unduly the various peculiarities of forms of feet, and overlooking real causes for acute symptoms, namely, those more remote obscure causes for musculo-ligamentous weaknesses and irritations. As a result of these errors, foot symptoms often are unnecessarily prolonged or aggravated by therapeutic procedures.

6. *Feet of persons in good health, who have never worn shoes, are flexible, and adapt themselves easily to innumerable unfavorable conditions,* because the latter states follow one another in rapid succession. All parts of the feet thus are alternately exercised and rested in a physiological manner, while no parts are too badly strained through maintenance of a single permanent position.

7. *Feet of persons in good health* are able to endure without injury, for variable periods of time, shoes that have pointed toes or broad ones, high heels or low ones, flexible shanks or stiff ones, shoes that are a trifle too short or long, or a trifle too wide or narrow for comfort across front parts at locations of transverse arches.

8. *Harm from high heels, pointed toes and shoes fitted too short or too narrow comes only when they are worn too much of the time.* Orthopedic shoes of most approved shape and fit are defective in one important respect, namely, that they tend to fix the feet in one position continuously, to the detriment of certain muscles and ligaments which become thereby weakened through comparative disuse.

9. *Several slightly different styles of shoes with variations in widths and flexibilities are preferable to a single shape and size of the most correct orthopedic last for individual wear,* because slight accommodative changes required in use of several different pairs of shoes of different proportions assist in retention of normal flexibility and adaptability found in barefooted races of people. One of the several styles, however, should be the usual foot-shaped orthopedic shoes.

When this ability of feet to make moderate changes without discomfort is lost, then prompt attention should be given to underlying tendencies that are developing unnoticed toward musculo-ligamentous defects.

10. *Causes of musculo-ligamentous defects* include too much mechanical use of the feet; harmful variations in blood supplying muscles and ligaments; and defective nervous control of these tissues. These three elements are found acting together in each person in normal or defective ways; and the most common defective variation is a combination of too much use with a temporary poor quality of blood.

It is correct to speak of only one defective factor in any selected instance, yet it is still more correct to recognize combined influences at work. For example, a person may fail to develop acute musculo-ligamentous foot strain after an unusual amount of exercise, or after some traumatic cause; but, if the blood becomes poor for any reason at this particular time then the same amount of exercise or an exactly similar injury may produce a strain. One physician, perhaps, will call the trouble a simple mechanical or functional strain. Another physician may point only to the vascular peculiarity, yet a more truthful interpretation includes recognition of both causes acting in combination.

11. *Vascular causes of musculo-ligamentous defects are obscure and numerous.* Some qualities of blood produce musculo-ligamentous weakness and relaxation; others cause muscular rigidity and tenderness; and many vascular peculiarities exert mixed influences so that practically these two extreme types of muscular relaxations or rigidities in a large series of cases show combinations of the two in all intermediate stages.

Furthermore, circulating substances influence bones and synovial linings of joints, as well as muscles and ligaments; and there may be additional confusions arise from adhesions forming in joints and tendon sheaths, or from reflex muscular rigidity due to irritative bacterial foci in the bones.

12. Clinically, musculo-ligamentous weaknesses or irritations, i.e., acute foot strains, are noticed in the following conditions: At times after prolonged illnesses like typhoid fever, scarlet fever, measles, pneumonia, and in connection with infections of tonsils, teeth, naso-pharynx and genito-urinary tract. Cachectic states associated with cancer, anemias, chronic pulmonary

tuberculosis are often accompanied by foot weaknesses and strains. Cardio-renal disease may lead to weakening and stretching of foot muscles and ligaments. Painful foot symptoms are commonly complained of before and after childbirth, due to important vascular and musculo-ligamentous changes going on at these times. Chronic gastro-enteric troubles, constipation, and visceroptosis are remote yet frequent causes of foot symptoms.

13. *The most common vascular origin for mild transient foot symptoms* probably is found in the numerous transient mild auto-intoxications and debilities arising from combinations of overwork, worry, high nervous tension, over-eating, and other accompaniments of our modern complex life.

14. *Painful foot symptoms are indicators of underlying, often unrecognized troubles, which may be more serious than the resultant foot disability.* For this reason foot troubles should not be treated locally simply, and all persons who are able should have opinions passed upon their general conditions by physicians who understand relationships which exist between foot defects and patients' general states of health. In this connection, it is well to recall that shoe retailers apparently relieve many cases of foot strain without medical assistance, but often this is because very many of these cases of foot trouble are produced and relieved by self-correcting debilities. At least, all cases which do not subside quickly should have proper medical attention in order to avoid as far as possible the establishing of very chronic resistant types of defects.

15. Practitioners' limitations in care of patients' feet are appreciated by practical shoemen, while many practitioners have still to recognize that there are some shoe retailers and shoe manufacturers whose knowledge of foot troubles locally is very complete. Urged by business competition and other causes, a few have temporarily encroached on the domain of medicine sufficiently to learn structures of feet and how feet maintain their natural shapes and functions. Furthermore, shoemen are familiar with many proportions and foot measurements which most medical men are entirely unaware of.

Their comments, accordingly, on the medical profession are interesting, and an opinion commonly expressed by them is that physicians usually are satisfied if shoes look well, have

broad toes, low heels and straight inside lines. Niceties of good fitting, the importance of looseness and snugness, correct balance, the necessity of having a good variety of styles to fit from, completeness in numbers of sizes and widths are points which doctors know too little about; and defects of which are responsible undoubtedly for many unsatisfactory results. The selection of shoe fitters should be made as carefully as selections are made of physicians for treatment of foot troubles.

16. Shoe manufacturers should have the task of furnishing harmoniously graded shapes and sizes of shoes to supply adequately all important needs; but a few of them only have succeeded as yet in constructing series on correct orthopedic principles. Then, secondly, it is essential to have fitters in retail stores who have proper understandings and proper stock to fit from, and these conditions are fulfilled exceptionally rather than usually. Finally, physicians in treating feet have to know how to apply supports, correct general systemic defects, and understand possibilities and limitations of shoe fitting; and in this respect the medical profession still shows a wide range of efficiency, with understanding inadequate not infrequently, it must be admitted.

Since only one important omission or mistake is needed to impair seriously the efficiencies of other steps in ultimate success, there are obvious reasons why so many imperfect results are still obtained. We can be optimistic over the great increase in knowledge, but ought also to be reasonably pessimistic over the chasm which still divides our present grades of efficiency from real perfection.

17. *Deformities are not devoid of significance* although they represent effects of past influences rather than causes of present troubles. They do indicate that feet are working more or less at a mechanical disadvantage although pain is not present; and, while certain muscles and ligaments may strengthen enough to compensate for disadvantages of deformities so that good function still remains possible, yet these structural defects should be corrected as far as practicable, keeping in mind the relative importance of degrees of defection that are being remedied.

18. *Orthopedic corrections of foot deformities* can be as uncomfortable as repeated "breaking in" of shoes in the past which produced these structural defects. And it is unwise to omit the explanations to patients that corrective orthopedic appliances or shoes are not

designed for increased comfort, but for slowly forcing feet back into normal shapes as rapidly as tolerance will permit.

19. *Corrective apparatus should not be forced vigorously with feet that are showing symptoms of acute strain*, because muscles and ligaments then are enduring all they can, and readjustments of corrective nature are liable to be crippling in effect. Instead, strained feet should be comfortably supported with adhesive straps, blood peculiarities attended to; and, finally, when abnormal symptoms have appreciably abated, gentle beginnings made toward slow corrections of pronations, restorations of defective arches and of deflected toes.

When too short shoes, however, are causes of pain, longer shoes should be prescribed immediately, and later, when symptoms have subsided, anterior arches can be forced upward gradually again.

20. *Manipulations, exercises and massage* should not be omitted in the more chronic types of foot troubles, because they are of very great importance if properly done at right stages in restoring normal ranges of joint motions, renewing normal muscle function, and in bringing back the flexibility and elasticity of feet. Details of these measures, however, cannot be discussed in this paper.

21. *New treatments* undoubtedly will be devised in the future and may be essential for special cases; yet the large majority of foot cases are likely to be treated more successfully in the future mainly through wider spread greater efficiencies in use of facilities now at hand. Closer coöperation between shoemen and the medical profession holds possibilities for much greater success.

22. *Special situations*, confusing and apparently contradictory in nature, can be cleared up in many instances only by puzzling over the facts already established, as, for example, employment of a single style of shoes for all men in the United States Army, while on the other hand, multiple styles of footwear are advocated by most progressive shoe dealers.

There are no doubts that feet vary greatly in sizes, shapes and proportions, and that consequently one shape in lasts will not fit all feet in all respects. But, with many widths and lengths a single style can be fitted comfortably and snugly across insteps and anterior arches, while a little extra length does no material harm.

This same style of last in its shorter, wider sizes, however, often produces transitory acute foot strain among army recruits who have been previously wearing shoes of various shapes; but their improved personal habits soon help to offset abrupt changes made in their footwear. After a few weeks merely a little extra broadness across toes usually becomes relatively unimportant with robust soldiers, and the only remaining menace of importance is too short shoe lengths. The latter difficulty obviously is not an insuperable one.

Customers in civilian life, on the other hand, require fittings of shoes to existing deformities and to musculo-ligamentous strengths more accurately, partly owing to demands of fashion, and partly because such customers are more likely to be debilitated or in poor physical conditions from various causes. Satisfaction of customers' whims and wishes have to be considered more carefully than in the Army, where serviceability counts most. Aims of shoe fitters are rather useless accomplishments from an orthopedic point of view when they try to fit all customers absolutely perfectly and comfortably from the very outset; because feet may go from bad to worse regardless of excellent local conditions when underlying vascular causes are not remedied. Feet have adaptability, which is not taken into account in these aims; and shoemen do not appreciate sufficiently the importance of general medical supervision when feet begin to lose their adaptability.

At other times confusion in customers' minds arises because one physician or shoe fitter advises shoes loose across anterior arches, while others recommend shoes with snugly fitted front parts. Both bits of advice may be right, however, for the same individual, and are reconcilable upon understanding that weakened, relaxed feet require additional supports temporarily, while at other times foot ligaments and muscles whose strengths have been restored are better if unsupported. Similar explanations apply to the usefulness and limitations of stiff and flexible shanks. Comparatively few fundamental physiological principles, including the need of alternate periods of rest and exercise, of effects of too much use and disuse, of too much and too little support, of natural adaptability and plasticity of feet, and importance of underlying vascular conditions will account satisfactorily for a multitude of the combinations observed which are individually perplexing.

23. *Surgical treatments for deflected toes* undoubtedly give most satisfactory results in many long-standing cases of severe grade; but it is necessary to sound a note of warning also that a very large number of hallux valgus patients can be equally improved by non-operative methods. As our knowledge of the great possibilities and limitations of surgery has increased, there have been wonderful advances in this special branch of medicine; and very few bad results are observed now after surgical treatments for deflected great toes. This fact, nevertheless, should not be allowed to obscure the comparative merits of other forms of treatment.

While it may be perfectly safe to operate on toe deformities, and almost surely relieve patients to some degree finally, yet the simple expedient of wearing proper shoes with corrective pads and cuffs will relieve the majority of mild cases without surgically damaging the ligaments of transverse arches of feet, and without disabling patients as operations do. Not toe deformities alone, nor possibilities for safe surgery only have to be considered; but functional foot defects which are represented have to be judged mainly, if the highest aim of medical practice, namely, the welfare of patients, is adhered to most strictly.

#### DISPENSARIES IN MASSACHUSETTS, PARTICULARLY IN BOSTON.

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THE Social Insurance Commission of Massachusetts, appointed in 1917, was interested to ascertain the extent to which dispensary service has grown in Boston, and elsewhere in the Commonwealth; the proportion of the population which dispensaries are reaching; the social and economic classes reached; and the kinds of medical service which are provided. The data in this paper were collected at the request of the Commission, and much of the text will appear as an Appendix to its Report.

Dispensaries and out-patient departments of hospitals are generally philanthropic institutions. They usually charge small fees, for instance, twenty-five cents or ten cents per visit, and similar amounts for medicines, etc. These fees are generally remitted in whole or in part when the circumstances of the patient appear to render it necessary.

With the assistance of the State Board of

Charity, to which all incorporated charitable institutions must report annually, a list of dispensaries and out-patient departments was secured, and the general statistics of their work ascertained. Table I shows a list of 22 dispensaries and out-patient departments, in Boston, and the total attendance, or number of "visits" made by patients to the clinic, also the number of new patients received during the most recent year for which statistics are available. This was usually 1916. The data are not complete, practically all of the tuberculosis dispensaries being omitted. Several small dispensaries are also not included. This renders the figures below rather than above the truth. Since this paper has reference primarily to general medical care, the omission of tuberculosis clinics would not affect conclusions based on these data.

It will be observed that the total annual attendance at these dispensaries was nearly 900,000, and that the number of new patients was over 250,000. To ascertain the number of different individuals we must bear in mind that there are a certain number of persons who are treated at more than one dispensary. Investigations published in *The Modern Hospital* of 1916 (Vol. vii, p. 359) indicate that this overlapping is small, not over 10%, and probably not over 5%. On the other hand, the number of "new patients" at the dispensaries during a year does not equal the number of different individuals during the same period, since many old patients who were treated during a previous year, keep on coming. A total attendance of 895,000 probably represents at least 300,000 different persons. Deducting 10% for overlapping, we have 270,000. Not all of these are from the city of Boston, but the great majority are. Certain of the dispensaries receive patients from Boston only; some, like the Massachusetts General Hospital and the Children's Hospital, receive a considerable proportion from outside the city. Only a few of the annual reports of the institutions state the proportions exactly, but it is very probable that fully three-quarters of the attendance is from within the city limits. Three-quarters of 270,000 is 202,500. It is safe to say that 200,000 residents of Boston receive treatment annually at the dispensaries of the city. This is one-quarter of the total population.

It must not be inferred that this vast number of persons received all of their medical service through these dispensaries. Many of them re-

ceive part of their medical service from a private physician, and come to the dispensaries for special service only. The three departments which correspond more or less to the field covered by the general practitioner are the medical (adult and children's), and the general surgical. At the Out-Patient Department of the Boston City Hospital, 68% of the new patients come to these three clinics, and 32% come to clinics dealing with specialties. At the Massachusetts General Hospital Out-Patient Department, 58½% of the new patients come to the three general clinics, and 41½% to the specialties. At the Boston Dispensary the proportion is reversed, 39% coming to the general and 61% to the special clinics. The average for these three largest institutions is 55% of new patients in the three general clinics, and 45% in the specialties. But a considerable proportion of patients (certainly over 10%, and probably 25%) in the medical, children's and surgical clinics, come to see a specialist. We may say with assurance that more than half of all the patients at dispensaries come to secure service such as requires a specialist rather than a general medical practitioner. In view of the high cost of specialist service at private office rates, this proportion is significant.

There are, in fact, large numbers of families who can and do employ a general practitioner for ordinary ailments, but who cannot afford to pay for the work of an oculist, or a throat specialist or a specialist in the diseases of children, etc. Also, it is a matter of common knowledge to all hospital administrators, that a certain proportion of dispensary patients are referred by doctors, mostly general practitioners, who wish their patients to have specialist service, for which the patient cannot pay.

All the dispensaries on the list aim to reject patients who can afford to pay a private physician for the care they need. The accurate enforcement of this policy is not always easy, for obvious reasons. Investigations have indicated, however, that the proportion of applicants for treatment at the Boston Dispensary and the Out-Patient Department of the Massachusetts General Hospital, who could pay for the medical service which they need, is very small, less than 3%. (See Annual Report, Boston Dispensary, 1915, p. 46.)

From what social classes does this army of 200,000 patients come? The great bulk are wage-earners or their dependents. The family

incomes have been tabulated for 1196 families, taken consecutively from the patients in the Boston Dispensary during September, 1917, and 191 families from the Out-Patient Department of the Massachusetts General Hospital, taken during November.\* Statistics of income have also been prepared for 1457 individual wage-earners, at the Boston Dispensary, taken during August, 1917. The family incomes, of course, include supplementary earnings of adults or children other than the chief wage-earner. The Massachusetts General Hospital figures agree quite closely with those from the Boston Dispensary, although the number of cases from the Massachusetts General Hospital is rather small on which to base any conclusions.

Taking all these data together, we find that about 40% of the families of these dispensary patients are earning less than \$15 a week; about 45% earn between \$15 and \$20, and 20% to 15% over \$20 a week. In other words, a little less than half of these families have an income of \$800 or less a year, and about the same number have incomes between \$800 and \$1000 a year.†

A highly significant figure is the number of cases known to be receiving material aid, *i.e.*, money, food, clothing, fuel, etc., at the time when they were dispensary patients. The proportion of families thus aided by charity was less than 3% among 1196 Boston Dispensary families.‡ It is safe to say that not over 5% of the patients at the dispensaries are usually in receipt of material aid from charitable agencies. In other words, the great bulk of the families whose members are cared for by the dispensaries of Boston are able to meet the ordinary expenses of maintaining a family during health, but they cannot meet the expenses of illness and pay the cost of medical service in addition.

Among the same group of patients of the Massachusetts General Hospital and the Boston Dispensary, it appears that a majority of fam-

\* Detailed tables are printed in the Appendix to the Report of the Social Insurance Commission, giving the figures on which these and the following statements are based.

† These estimates of income, based on usual weekly earnings, are probably conservative, as most working people have periods of unemployment which, even during the present prosperous times, would amount to something through the year. The figures, moreover, correspond quite closely to the general levels of wage-earners' incomes, which the reports of our State Bureau of Statistics show to prevail in this community.

‡ Reference is made later to a special intensive study of a number of families, made by the Social Service Departments of the Massachusetts General Hospital, Boston City Hospital, Psychopathic Hospital, and Boston Dispensary, and including 159 cases. It was found that only 49 out of these 159 families, or less than 30%, were in receipt of material aid, although Social Service Department cases are those who present some family problem, or distress other than medical need.

ilies have three children or more; that the proportion of large families is not, however, unduly great; that, in fact, the size and constitution of families is not very different from that which would be found in the community as a whole.

Previous to the war-time régime of abnormally high prices, an income of \$800 a year, for a family of average size in Boston, was estimated by several careful students to be barely sufficient for the minimum physical necessities, and gave no margin for the emergency of illness. An income of \$1000 a year, for a family of five or six, gave only a very slight margin. Thus, even before the war, families receiving such incomes as these dispensary patients possess, could but just support themselves during health, but could not bear the burden of illness without either deprivation of food or other necessities, or else recourse to charity. At the present time, the above estimates are too low, for wages have, on the average, risen much less than the cost of living. The incomes of these dispensary patients are not lower than are shown by our State Bureau to prevail among many wage-earning groups. They can often pay for medical service in an emergency, but out of an income of \$1000 or \$1200 a year a family of five or six persons cannot meet the expense of specialist service, nor of any long-continued illness. When the illness is of the chief wage-earner the condition of the family usually becomes serious.

The question has been raised whether, under the present system, the patient frequently delays in getting medical treatment long after the onset of his disease. Data were secured on this point from 1529 patients at the Boston Dispensary and 197 at the Out-Patient Department of the Massachusetts General Hospital—a total of 1726. Out of the 1726, 1236 had had no medical care previous to coming to the clinic, and 435 of these, or 35%, had been suffering from their ailment for three months or more before seeking the clinic's care. One hundred and sixty-three additional cases, or 13% out of the same 1236, had delayed from one to three months. Out of the whole 1726 cases, 350 had waited from a week to a month, while 430 had gone to the clinic within a week from the time they felt their illness.

These figures can be better understood when delay in securing treatment is tabulated in connection with particular diseases. This has been

done for 1529 Boston Dispensary cases. Where diseases are such as cause much pain or discomfort in their early stages, such as minor surgical lesions, cuts, burns, etc., or irritations of the skin, treatment appears to be sought pretty promptly. On the other hand, with diseases that cause less trouble to the patient in the beginning, but which are often likely to be more serious, there is frequently more delay. Thus 15 out of 29 patients with tuberculosis were conscious of illness over three months before they sought any kind of treatment, and 7 waited a whole year; 15 out of 37 cases of syphilis waited more than three months, which is past the period when the disease can be most effectively dealt with; 40 out of 69 of disorders of the circulatory system (mostly heart diseases), and 10 out of 21 cases of kidney disease, waited over three months.

Of the minor diseases of the ear, nose, and throat, not requiring operation, 48 out of 75 cases waited less than one month, while out of 152 more serious cases, requiring surgical operation, only 43 cases came within a month, and 98 cases waited over three months. The same contrast appears in "general surgery," since the non-operative and usually minor cases appear to have waited less time before seeing a doctor than the operative cases, which are generally more serious.

The data collected also show the proportion of patients who had some medical care previous to coming to the clinics, and whether this care was secured from a private doctor or from another medical institution (usually a hospital). Three hundred thirty-nine cases (out of 1726) had previously been to a private doctor. The usual reason given for leaving him was that they "had no more money to pay him." A considerable number of cases are referred to the clinics by the doctors, for consultation or for care by a specialist for which the patient could not pay at private rates.

The fact that of these 1726 cases, only 339 had had a private doctor, whereas 435 persons had waited three months or more before getting any medical treatment, suggests that private medical practice is not sought by a large proportion of people because they feel they cannot afford it. It also indicates that there are many persons who either do not know of dispensaries, or who do not wish to accept medical charity. Under the best conditions, people will often delay in going to a doctor, even if a doctor is free. The



figures regarding delayed treatment must be interpreted with this caution in mind.

The Social Service Departments of the four institutions above mentioned rendered reports of 159 cases which had been individually studied. Among the points taken up was the extent of any form of insurance in these families. It was found that sickness insurance was infrequent. Only 23 out of 159 families carried any sickness insurance. One hundred and twenty-four stated that they had none; in 12 cases no data on this point were secured. *Life* insurance was fairly frequent, 60 families carrying some insurance on one or more members, 78 carrying none, and 20 furnishing no information on this matter. This "life insurance" is usually industrial insurance on the weekly-payment plan, providing small amounts on the death of the insured person. The majority of the 60 cases pay 50 cents a week or more for this insurance.

A comparison of the figures secured in this study may be made with the information gathered in California by the Social Insurance Commission of that State in 1916, and published in their Report during the early part of 1917: "Among 2587 patients applying at dispensary clinics in San Francisco, only 53 were dependent upon charity, public or private, for their support" (page 43 of Report). In addition, there were 137 cases of unemployment where dependency was imminent, making a total of 190 cases, or 7%, in which the "application for free treatment at the clinics in San Francisco could be attributed to the fact of dependency or unemployment" (page 44). In 42% of the 2587 San Francisco cases the family income was \$14 or under a week, which compares closely with the 36% found among the Boston Dispensary patients, and 43% among the Massachusetts General Hospital cases. The studies in Boston and San Francisco—the two extremes of the continent—are alike in showing that a large number of self-supporting wage-earners of small incomes, not otherwise dependent in any sense, are seeking medical assistance at dispensary clinics. The California Commission accounts for this situation as follows (page 46 of their Report):

"It would be futile to ascribe such seeking (of medical care at the clinics) to a total lack of self-respect and an endeavor to get something for nothing on the part of these individuals. The number of them alone would be sufficient to refute such a conclusion. Aside from this point,

however, the interviewing and observation of 1000 cases would convince any one that there is a more far-reaching and direct cause responsible. The growing attendance at the free clinics is accounted for by the fact that they can there get from physicians and surgeons, whom they know to be men and women of reputation, specialist care, which they cannot possibly afford to purchase. There is no reason to suppose that if there were a way by which they might buy this same attention for a small price within their means we should still find the bulk of them frequenting the 'free clinic.'"

In the city of Boston we found that a quarter of the population receive care at dispensary clinics annually. A marked contrast appears between Boston and the remainder of the Commonwealth. From data furnished by the State Board of Charity we find that in Massachusetts, outside of Boston, there are only 30 dispensaries and out-patient departments. The total number of visits paid by patients to these 30 dispensaries and out-patient departments was 138,000 for the last year during which reports were available (usually 1916). The list of institutions is given in Table II. The number of new patients reported was 32,000, and the probable total number of different individuals treated was between 50,000 and 60,000. Boston has one-fifth the population of the Commonwealth, but between three and four times as many dispensary patients as all the other cities and towns in the Commonwealth put together. This is true in spite of the fact that Boston has more physicians in proportion to its population than the rest of the State. The fact that most of the tuberculosis dispensaries are omitted from the lists would not substantially affect the contrast between Boston and the rest of the Commonwealth.

Do these facts mean that Boston is over-supplied with facilities for charitable medical care? Or does it mean that the remainder of the Commonwealth is under-supplied? The statistics gathered do not furnish an answer to this inquiry. There can be little doubt that many communities in Massachusetts contain large numbers of wage-earners whose incomes are no higher than those found among dispensary patients in Boston. The question may at least be raised whether no need exists, in such communities, for some system of organized medical care, particularly in the specialties, such as the dispensaries of the metropolis in a measure provide?

The organizations of dispensaries as found in Boston would, of necessity, have to be adapted to the conditions in smaller communities. In a large city specialists in all the different branches of medicine are usually found, but they are relatively much fewer in smaller places. The large dispensary, particularly if attached to an important hospital, provides medical advantages to the physicians on its staff, by affording facilities for diagnosis and consultation, which

be little doubt that any considerable expansion of dispensaries in the smaller communities must be based upon a system of remunerated medical services, and that such remuneration is necessary, both in justice to the medical profession and in order to have sufficient and efficient service in the clinics. One of the disadvantages of the present system in the dispensaries of Boston is the fact that almost all the clinics are held during working

TABLE I.

## DISPENSARIES AND OUT-PATIENT DEPARTMENTS IN BOSTON.

NAME OF INSTITUTION	TOTAL VISITS	TOTAL NEW PATIENTS
Berkeley Infirmary .....	5,075	782
Boston City Hospital (including Relief Stations) .....	221,267	86,922
Boston Dispensary .....	118,918	24,505
Boston Lying-in Hospital .....	7,388	1,632
Carney Hospital .....	48,111	18,965
Children's Hospital .....	44,405	9,283
Denison House .....	4,848*	1,616
Dispensary for Women .....	10,111	1,093
Dorchester Relief Society .....	1,000†	300†
Forsyth Dental Infirmary .....	29,186	17,060
Jamaica Plain Dispensary .....	1,328*	442
Lincoln House Association .....	5,778*	1,926
Mass. Char. Eye and Ear Inf'm'y .....	76,017	30,698
Mass. General Hospital .....	201,875	31,061
Mass. Homeopathic Hospital .....	44,094	12,745
Maverick Dispensary .....	8,301	2,052
N. E. Hospital for Women and Children .....	6,012*	2,004
Peter Bent Brigham Hospital .....	36,523	8,586
St. Elizabeth's Hospital .....	8,713	2,936
Salvation Army (Rescue Home) .....	300*	100
Woman's Home Miss'y Society (Hull Street Dispensary) ..	16,643	5,548
<b>TOTAL</b> .....	<b>895,391</b>	<b>260,206</b>

NOTE.—These figures do not include some small dispensaries and also omit the City Tuberculosis Dispensary. The number of "new patients" is not the same as the number of *different individuals* treated.

\* In certain cases which are marked with an asterisk (\*) the reports of the institutions as furnished to the State Board of Charity did not contain the number of visits and in certain other instances they did not contain the number of new patients. Where either figure was given the other has been estimated according to the rule that the number of visits is usually not less than three times the number of new patients.

† Estimated.

a small dispensary cannot offer. Connection with a medical school is also of value to a physician, and is not possible except in a city which has one or more medical colleges. For all these reasons it would be much more difficult and often impossible to secure in small communities anything like the amount of volunteer medical service which is found in the dispensaries of Boston. It may, indeed, be questioned, whether the custom of depending upon volunteer medical service in dispensaries has not reached a point at which the system threatens to break down by its own weight. In any case, there can

TABLE II.

## DISPENSARIES AND OUT-PATIENT DEPARTMENTS OF HOSPITALS OUTSIDE OF BOSTON.

NAME OF INSTITUTION	TOTAL VISITS	TOTAL NEW PATIENTS
Brockton Hospital Company, Brockton .....	1,660	690
Free Hosp. for Women, Brookline .....	8,124	1,920
Cambridge Hospital, Cambridge .....	8,484	1,420
Rufus S. Frost General Hospital, Chelsea .....	1,658	999
Clinton Hospital Association, Clinton .....	1,844	448
Framingham Hospital, Framingham .....	236	135
St. Anne's Hospital Corporation, Fall River .....	1,753	586
Union Hospital, Fall River .....	30,529	3,998
Addison Gilbert Hospital, Gloucester .....	250	272
Hale Hospital, Haverhill .....	177	59
Ladies' Union Charitable Soc. (Lawrence General Hosp.) .....	5,157	1,719
Lowell Corporation Hospital, Lowell .....	17,856	4,716
St. John's Hospital, Lowell .....	5,645	1,766
Ludlow Hospital Soc., Ludlow .....	2,142	487
Lynn Hospital, Lynn .....	18,691*	5,642*
Malden Hospital, Malden .....	816	272
Melrose Hospital, Melrose .....	601	299
Milford Hospital, Milford .....	219	196
Glover Home and Hospital, Needham .....	20	20
Anna Jacques Hospital, Newburyport .....	626	374
Cooley Dickinson Hospital, Northampton .....	383	99
Hillcrest Surgical, Pittsfield .....	5,296	883
Salem Hospital, Salem .....	6,100	1,527
Somerville Hospital, Somerville .....	17,568	606
Springfield Hospital, Springfield .....	1,386	462
Morton Hospital, Taunton .....	100	56
Waltham Hospital, Waltham .....	404	433
Noble Hospital, Westfield .....	36	12
Memorial Hospital, Worcester ..	11,385	3,578
<b>TOTAL</b> .....	<b>143,651</b>	<b>33,678</b>

NOTE.—The tuberculosis dispensaries are not included.

\* Same footnote as to Table I.

hours, so that wage-earners coming to the dispensaries lose time and money. So far as dispensary service is to be for the benefit of employed persons, it should include, in Boston and elsewhere in the Commonwealth, a reasonable proportion of clinics held in the late afternoon or evening.

## SUMMARY.

Twenty-three dispensaries in Boston treat 200,000 persons annually, or one-quarter of the population of the city. In all the remainder of the Commonwealth there are only about thirty dispensaries, receiving altogether only 50,000 to 60,000 patients a year. Facts gathered concerning certain groups of dispensary patients in Boston indicate that the bulk are from self-supporting families with incomes similar to those possessed by the majority of wage-earning families in general; and that these families, while able to meet their ordinary expenses, cannot provide for the emergency of sickness nor pay sufficient for the medical service which they require, to secure it at private physicians' rates. Delay in obtaining needed medical treatment after the onset of disease is frequent, especially in diseases which begin insidiously, even when they are serious. Protection to the wage-earner or his family by means of sickness insurance is infrequent. The present dispensary system, while providing greatly-needed treatment, both in general medicine and surgery and in the specialties, has the disadvantages of depending upon volunteer medical service, and of being usually inaccessible to wage-earners except during working hours.

### ON THE POSSIBLE NATURE OF MEASLES.

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State Commissioner of Health.

CONCERNING the nature of the disease agents which give rise to the acute exanthemata, Von Jürgensen<sup>1</sup> said: "Since the methods which serve for the demonstration of pathogenic microbes fail us here, we are justified in concluding that we have to deal with something of a different nature. We have no ground, however, for assuming that this different 'something' is not a living organism, since every argument favorable to a belief in a *contagium vivum* as the cause of infectious diseases in general applies in full force to the acute exanthemata."

Many years ago Jenner<sup>2</sup> asked the question in regard to measles, scarlet fever, etc.: "May we not conceive that many contagious diseases, now prevalent among us, may owe their present appearance not to a simple but to a compound origin?"

In presenting an hypothesis that scarlet fever and the other acute exanthemata may be due to varieties of bacterial anaphylaxis depending on various well-known micro-organisms, I suggested in a recent communication<sup>3</sup> that the acute exanthemata may depend on something more than mere primary infections with bacteria. I believe that the evidence points to a streptococcic anaphylaxis as the "compound" cause of scarlet fever.

Measles, also, may be nothing more than the manifestation of an anaphylactic intoxication following sensitization with a well-known micro-organism. In spite of the fact that measles is the most prevalent and widespread disease to which human flesh is heir, its cause has not been explained by finding or assuming any simple microbic agent. Either the causal agent is one which is unrecognizable by our present methods of examination and diagnosis—a rather hopeless outlook—or the cause is so simple in its explanation that we have overlooked it.

It may be said that measles is, primarily, an acute respiratory disease. That the organism *par excellence* of acute respiratory disease is the pneumococcus will be admitted by most authorities. Is the pneumococcus guilty of being the prime cause of measles? Examine the records of our Army camps. Is it not suggestive that measles and pneumonia seem to closely coincide in number of cases, seasonal prevalence, mode of spread, communicability, etc.?

An account given by Duncan<sup>4</sup> of a recent epidemic of measles and pneumonia at Camp Wheeler is most interesting in this connection. In point of time the measles curve and pneumonia curve almost coincide. There were 701 cases of pneumonia and 2939 cases of measles. Of the 701 cases of pneumonia, 312 (44.51%) were preceded by measles, while 389 (55.49%) were not preceded by measles. 10.6% of the 2939 measles cases developed pneumonia. Duncan says that "the two diseases occurred in different parts of the camp at about one and the same time, showing thereby that a common factor present at the same time in different parts of the camp had to be considered." The pneumococcus as the etiological agent in both diseases would explain many of the facts brought out.

From the standpoint of general factors such as annual, seasonal and monthly incidence curves, it may be said that measles and pneumonia correspond. Sporadic cases of each dis-

ease exist in nearly every community, and each may take on epidemic proportions. So far as geographical distribution is concerned, it is known that both diseases are ubiquitous. In civil life as well as in Army life pneumonia is now looked upon as a highly communicable disease, for which isolation and disinfection are as important as in cases of measles.

Susceptibility to both diseases and virulence of the causal agents seem to vary considerably from time to time. Both diseases have as predisposing factors—crowding, poor ventilation, and the promiscuous spread of mouth and nose secretions.

Both measles and pneumonia are transmitted chiefly by direct contact, and the infectious agent of each has little vitality outside the body. Through the air zone of droplet infection due to coughing, sneezing, talking, laughing, etc., both diseases may be transmitted easily.

Before proceeding further it may be well to compare the symptoms and signs of measles with those of serum sickness, which is an admitted example of anaphylaxis. Following is an outline of the symptoms and signs common to these diseases.

There is nothing in the various experimental results obtained by many investigators which is incompatible with the above explanation of the nature of measles. The numerous instances in which the inoculation of filtered or unfiltered blood, or mouth or nose secretions, from cases of measles to apparently normal individuals (or to monkeys) have resulted in transmitting the disease, may be explained by assuming the passive transference of a hypersensitive state (passive anaphylaxis) through blood serum, or the active carriage of the micro-organism from one individual to another who has been previously sensitized.

About two years ago I carried on a brief investigation to test my original hypothesis as to the nature of measles. On account of other work, this investigation has been more or less interrupted until quite recently.

Realizing that the buccal mucous membrane is one of the earliest points of attack in measles, and that the characteristic lesions (Koplik spots) first appear on such membranes, it was decided to make a careful microscopic and cultural examination of these membranes in various stages of measles. Twenty-four sporadic cases

TABLE I.

CHARACTERISTICS	MEASLES	SERUM SICKNESS
Incubation period	10 days (average)	10 days (average)
General malaise	Present	Present
Fever	Present	Present
Eruption	First in mouth (Koplik spots). Spreads to skin of face and then over entire body. Has a variable appearance. Severe itching.	First around site of injection and then spreads over body. Has variable appearance. Often indistinguishable from measles rash. Severe itching.
Edema	Present	Present
Lymph adenitis	Present	Present
Albuminuria	Frequently present temporarily	Frequently present temporarily
Blood changes	Early leucocytosis and later leucopenia	Early leucocytosis and later leucopenia
Protection	One attack protects for variable period of time	One attack protects for variable period of time (antianaphylaxis)

It is noticeable that in serum sickness there is little or no evidence of the various inflammatory lesions in the conjunctivae, nose, mouth, and throat, which are commonly found in measles. This may be interpreted by assuming that the possible anaphylaxis of measles is a natural one following the bacterial infection in the conjunctivae, nose, mouth and throat as portals of entry, while serum anaphylaxis is artificially produced with its chief local signs around the injection site. On the other hand, congestion of the conjunctivae and other membranes is frequently associated with serum disease.

occurring in the city of Boston were studied, and form the basis of this preliminary report.

Sterile glass slides, swabs, and tubes of media were used in each examination. The patient was placed in such a position and light that a good view of the buccal mucous membrane could be obtained. Using care not to touch the lips, tonsils, or other parts of the mouth except the insides of the cheeks, sterile swabs were rubbed with considerable force over the mucous membrane. For each case three different swabs were used. The first was inoculated onto Löffler's blood serum, the second into glucose broth with

a reaction of 0.3 to 0.5 acid to phenolphthalein, and the third was smeared over a sterile glass slide which was then fixed by heat. The cultures were incubated in an inside vest pocket until they could be placed in a laboratory incubator (usually within one-half hour). At the end of 24 hours, subcultures were made in various media, especially tall tubes of glucose agar (previously boiled to expel the air) and into tubes of ascitic fluid—kidney media with a layer of paraffin oil for the purpose of determining possible anaerobic organisms. Smears were stained by Gram's method and counterstained with safranin. No attempt was made to differentiate between types of pneumococcus.

As a result of these preliminary tests, it was found that all cultures showed the presence of pneumococci. Pneumococcus was grown in pure culture from fifteen. From the remaining nine cases pneumococci mixed with other pathogenic organisms such as staphylococci, streptococci, and mic. catarrhalis were cultivated. In the smears various mouth organisms were found, but in most cases the pneumococcus prevailed in largest numbers, especially within the phagocytic cells.

The predominance of the pneumococcus in many of the smears and cultures examined is certainly suggestive, and the additional finding of several pure cultures of pneumococcus adds strength to the opinion that the measles stomatitis in these cases was due chiefly to this organism. The fact that pneumococci may frequently be found in the mouths and saliva of apparently normal individuals prevents any positive deduction in this regard.

Of more importance than the prevalence of pneumococci in cultures from the buccal mucous membrane, is the finding in the smears examined of a very definite epithelial (endothelial) phagocytosis of pneumococci. If we are to give credence to our theories of positive chemotaxis, and believe that phagocytosis is an active defense of the body cells against attacks of bacteria, etc., we must assume that in the above instances the pneumococci were the invading hosts and that they were present in more than an incidental way. In these cases the evidence points to an active invasion of buccal mucous membranes by pneumococci, and an equally active defense on the part of the tissue cells against pneumococci.

In addition to verifying the above ideas and findings the writer is undertaking experiments

to determine the possibility of using simple anaphylactic skin tests for the diagnosis of measles and scarlet fever.

The value of prophylactic streptococcus vaccines for the prevention of scarlet fever has been demonstrated by Gabritschewsky<sup>5</sup> and other Russian workers, as well as by Watters.<sup>6</sup> Along this same line, experiments are being attempted by the writer to determine the value of prophylactic injections of pneumococcus vaccine to prevent measles. In this connection, however, it must be kept constantly in mind that the process of desensitization, or of bringing about an anti-anaphylactic state, may in some cases first result in an actual anaphylactic condition with serious symptoms. In from ten to fifteen per cent. of persons who have been given the prophylactic streptococcus vaccine, a scarlatiniform eruption appears at the site of injection and often extends over the entire body. This may be associated with fever and all other symptoms of scarlet fever. Unless these are all coincidental cases of scarlet fever (an unwarranted assumption), it must be admitted that true scarlet fever in man may be thus artificially produced in a hypersusceptible individual, and it constitutes one of the strongest arguments for the theory that scarlet fever is the result of a streptococcic anaphylaxis.

It would seem advisable to use pneumococcus vaccines in the prevention of pneumococcic infections, and anaphylaxis, in both the Army and civil life. Military authorities are beginning to agree that vaccination with pneumococcus probably offers a better means of preventing the spread of pneumonia than does isolation of cases. It will most certainly be interesting to determine whether or not measles, also, may be decreased in its incidence in Army camps, following judicious prophylactic injections of pneumococcus vaccines.

That measles is nothing more than the manifestation of a pneumococcic anaphylaxis is worthy of consideration, as is also the suggestion that scarlet fever is dependent on a streptococcic anaphylaxis.

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- <sup>4</sup> Duncan: The Military Surgeon, Vol. xlii, No. 2, p. 123.
- <sup>5</sup> Gabritschewsky: Cent. f. Bakt. Orig., 1906, xli, 719 and 844; Berl. klin. Woch., 1907, xlii, 556.
- <sup>6</sup> Watters: Jour. A. M. A., 1912, Vol. lviii, p. 546.

### Book Reviews.

*The Pathology of Nephritis.* By WILLIAM OPHÜLS, California, Stanford University.

This monograph on the pathology of nephritis is illustrated by 32 consecutive cases and consists, primarily, of reports of these cases, pathologically grouped and discussed. Nephritis is classified on this basis into acute, subacute, subacute and chronic in children, and chronic. Only the glomerular form of the disease is considered. The author believes it due always to a bacterial infection, most commonly with members of the streptococcus family. The continuance of the disease is often due to a focal infection elsewhere. Edema, hypertension, and arterial stenosis are to be regarded as associated incidents or manifestations, due to the fortuitous action upon other tissues of the same cause, which injures the kidneys. The work is illustrated with 64 microscopic plates, and is a useful contribution to the pathology of nephritis.

*The Practical Medicine Series.* Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume II, General Surgery. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., F. R. C. S. England (Hon.), F. A. C. S., Professor of Surgery in the Northwestern University; Attending Surgeon and Chief of Staff of Mercy Hospital, and Columbus Hospital; Consulting Surgeon to Cook County Hospital and Alexian Brothers Hospital, Chicago. Series 1916. Chicago: The Year Book Publishers.

This small (five by six) familiar volume is of course the final one edited by Dr. John B. Murphy. This fact alone increases the reader's interest and awakens recollections of the dead editor. Dr. Murphy has written a brief introduction of four pages: this corresponds to the conclusions which sometimes are, and always should be, placed at the end of a surgical monograph. In this volume they come at the beginning, and offer an excellent bird's eye view of the most important contributions to surgery during the previous year: a summary of progress, in fact.

It is quite impossible to review in detail this solid little book of 600 pages. It seems very

complete, admirably condensed and satisfactorily illustrated. Accurate references to original papers are given under the head of each author who is quoted. The editor's comments, always brief and unequivocal, are enclosed in parentheses.

The book is an extremely satisfactory summary of recent surgical work. It is recommended to all surgeons, without reserve.

*UNIVERSAL MILITARY EDUCATION.* By LUCIEN HOWE, Fellow of the Royal Society of Medicine; Member of the Royal College of Surgeons. New York and London: The Knickerbocker Press.

This volume is a sequel to the author's "Brief for Military Education in Schools and Colleges," published last year. Its advocacy of universal military training is chiefly of interest from the medical standpoint, on account of its relation to physical education. The author advocates the adoption of the Swiss system, or some modification thereof, in the United States, and this monograph is an exposition of his reasons and arguments. Whatever the personal attitude of physicians on this subject, this book is commended to their reading, for the pertinence of its observations and comments.

*Aids to Bacteriology.* By C. G. MOOR, M.A. (Cantab.) F.I.C., and WILLIAM PARTIDGE, F.I.C. Third Edition. New York: William Wood & Co.

The previous editions of this volume on bacteriology in the "Student's Aids Series" have been reviewed in the JOURNAL. This third edition, though it chronicles no notable discovery, represents a considerable extension and consolidation of previous knowledge on this subject. The conditions of military surgery in the European War have emphasized the important pathogenic possibilities of many anaerobic organisms. Meningitis as a disease of encamped troops has increased in importance, and the authors have extended their articles upon it and added an appendix. In another chapter is collected a summary of what is known about the filterable viruses, anaphylaxis and the preparation of vaccine. In discussing the anaerobic organisms mentioned, particular emphasis is given to the relative values of various antiseptics in sterilizing contaminated wounds. A few terminal chapters are devoted to the bacteriology of sewage, shell fish, meat, soil, air, milk and water, and to the more peaceful relations of bacteriology to agricultural methods in soil sterilizations, and in nitrogen fixation. The volume should continue its useful position in the series of manuals to which it belongs.

# THE BOSTON Medical and Surgical Journal

Established in 1828

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, MARCH 28, 1918

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## INFECTIVE JAUNDICE AND WEIL'S DISEASE.

A CAREFUL gathering together of the various articles contributed by medical officers on toxic and infective jaundice and Weil's disease gives a very interesting study of the points of especial importance, and adds appreciably to our knowledge of the pathology of the liver. Of the three types, toxic jaundice, which has become familiar among munition workers, may be put aside for the moment. As for infective or spirochetal jaundice, there is an increasing tendency to differentiate it from Weil's disease. In some of the earlier reports, notably that by Stokes, Ryle and Tytler, which appeared in the *Lancet*, January 27, 1917, infective jaundice is regarded, both historically and clinically, as virtually the same disease as that described by Weil. Yet there seems to be a strong probability that the two diseases have clearly defined differences. On this point it is noteworthy that Weil himself has recently expressed a strong opinion (*Deutsche*

*med. Wochenschrift*, 1916). He states that the cases observed by many writers are distinct from those which he has described.

Further information has only confirmed what he says as to the causes and symptoms of infective jaundice. On the Italian front, for example, Sampietro (*Annali d'igiene*, 1917) observed many cases which differed from Weil's disease in being relatively benign, in the absence of fever and albuminuria. Physicians, who before the war have seen cases of Weil's disease, will readily admit it is a serious form of icterus, with enlargement of the spleen and nephritis, or, as some writers like to add, with evidences of systemic infection. It rarely exists in an epidemic form, though many cases have occurred at one time in summer, in troops after swimming exercises and after eating fatty foods. According to Bäumler (*Muenchener med. Wochenschrift*, October 17, 1916) icterus is nearly always present as well as splenic enlargement, fever and nephritis. It has been known for some time that Weil's disease is peculiarly an affair of hot weather, youth, the male sex, food and swimming, all of which, according to Hecker and Otto (*Deutsches Archiv für klin. Med.*, 1892, p. 232) suggest an infection through the mucous membrane of the nose and throat and the alimentary tract.

So far as the German authors believe, Weil's disease is not caused by the *Spirochaeta ictero-hemorrhagica* of Ita and Inada, nor by the spirocheta of Hübener and Reiter (*Berliner klin. Wochenschrift*, 1916, p. 131). In fact, there is no evidence which seems to fit in with the theory that the infective agent of Weil's disease is a visible organism. This point is very clearly brought out in the most recent work on the differentiation of the two forms of jaundice. In the January issue of the *Journal of the Royal Army Medical Corps*, Colonel Martin, F.R.S., states that the distinction may be thus expressed: "In the spirochetal disease, in addition to hepatitis and jaundice, hemorrhages and an acute nephritis occur. It has a mortality of twenty to thirty per cent. and is apparently dependent upon man's association with rats for its propagation. The Gallipoli disease was much milder, was apparently more infectious, and there was no reason to suppose that rats contributed to its dissemination. Nevertheless striking analogies occur." In the cases of this jaundice, Colonel Martin adds, no blood parasites were found in films.



Another very uncertain factor in spirochetal disease appears to be the jaundice. On this point the best opinion is divided. According to Schott (*Muenchener med. Wochenschrift*, October 24, 1916) it occurs in nearly all cases. Martin and Pettit, on the other hand, observed it in only fifty per cent. of the cases in the French camps (*Bulletin de l'Académie de Médecin*, October 10th, 1916). The British, French and Italian authors generally agree with this opinion. It has been suggested, however, by Monti (*Bollettino della Società medico-chirurgica di Pavia*, No. 4, 1916) that icterus may be a misleading symptom, as it may indicate the co-existence of catarrhal jaundice and the jaundice of paratyphoid infection. Hence some British writers believe that the term "icteric" is something of a misnomer, the two characteristic features being the hemorrhages and the spirochetosis. The distinction certainly has the merit of clearness.

Most authors accept the spirocheta described by the Japanese biologists Ita and Inada (*Journal of Tropical Medicine*, January, 1917) as the causal organism. The evidence is sufficiently strong, but some authors have failed to find it in their cases. Looking at this organism in its bearing on the different symptoms of the diseases, we may inquire how far other spirochetæ may affect the question. Infective jaundice has several elements of uncertainty; in some cases the *Spirocheta pallida* has been found, and in still others a spirocheta isolated by Uhlenhuth and Fromme was the alleged cause. There seems in the present state of our knowledge no proof that there is a single organism at work. The appearance of the spirocheta of Ita and Inada is by no means invariable. It has been found in the kidneys of field rats, but not always (Nicolle and Blanc, *Société de biologie*, No. 9, 1917). Further researches seem to be necessary in this direction, as well as in the study of the specific immune bodies.

In saying this we are far from suggesting that Monti is right in his argument that infective jaundice is not an entity. The belief in a specific organism has amply justified itself by the facts of the case—the long period of incubation of three weeks, like syphilis, the sudden onset, the petechial hemorrhages, the lysis, and relative mildness of the disease. But it would be interesting to account for the cases of icterus gravis, acute yellow atrophy, and meningitis which have been noted as complications.

## INCIPIENT AND ADVANCED TUBERCULOSIS.

It is no longer consonant with the advanced conception of the nature of pulmonary tuberculosis to differentiate incipient and advanced tuberculosis, nor to separate the disease off into stages for any purpose except in the most relative sense. This classification gives the patient a sense of security not warranted by the circumstances, or too gloomy a one, as the case may be. Neither in this disease nor, indeed, in any other is the line of demarcation between pathologic developments sharp enough for such determinations. In tuberculosis, particularly, is the time of the inception of the disease especially hard to discover, because so many recover from the infection before a diagnosis can be made. The discovery of the first palpable signs or symptoms of this disease may be long removed from the actual commencement of infection. Often the discovery of the pulmonary lesion is synchronous with the invasion of the general organism, that is, with the time when the ravages of the disease manifest themselves in disturbances of all the organs. To classify the progress of the disease in accordance with the amount of pulmonary involvement would be to ignore those cases with little or no physical signs because too deep in the tissues or not sufficiently circumscribed to manifest themselves to the senses, but where symptoms, and even sputum, may be positive. General miliary tuberculosis may have origin in a focus of infection not patent to the senses of an examiner. The size of an area of involvement is seldom an indication of the duration or of the severity of an infection. In susceptible individuals with little resisting power, any lesion denotes an advanced stage, no matter how recent the origin, if that could be determined. On the other hand, in resistant individuals, even a very large area may denote a very tractable condition, for the active part of the lesion may be a very small part of the whole, the rest being healed and scarred tissue. These large areas may have less systemic symptoms than very small but active lesions. Even in the matter of prognosis, a small lesion with systemic symptoms may be of graver import and actually more advanced than a very large lesion without symptoms. Within reasonable limits, the determination of the progress of the disease, as well as the outlook in pulmonary tuberculosis, is dependent largely upon the systemic symp-

toms rather than on physical signs. In all likelihood, subjects in whom the systemic manifestations are severe are the ones in whom the outlook is uncertain; and cases of so-called far-advanced tuberculosis that, nevertheless, come to cure are all the time really incipient in that healing and spread go on hand in hand, while at no time is the active disease area very profound, although much tissue had actually been involved. In fact, the disease is practically a local infection so far as the general organism is concerned. The organism can compensate for the destruction of a great deal of lung tissue without perceptible reduction of the air space.

The tendency to view tuberculosis with more gravity than heretofore, especially with respect to military service, has been enhanced by observation of the behavior of known tubercular cases in military life. There is little doubt that those cases of tuberculosis that were able to weather severe campaigns were cases in which the disease had practically always been local, no matter how large the area of involvement. In tuberculosis, if there is a line of demarcation between incipient and advanced involvement, the line hinges on the question of systemic participation in the disease. The terms "incipient" and "advanced," while in one sense unjustified, if they must be used, should be employed with these facts in mind, and as especially indicative of the effect of the disease upon the organism as a whole rather than upon the pulmonary tissues alone.

## THE SERUM TREATMENT OF PNEUMONIA.

In discussing the reasons for the lack of marked success with the serum treatment of pneumonia, and perhaps even to a greater degree with the pneumococcus vaccine, it must be remembered that, while pneumonia is caused by the pneumococcus, there are many strains of this coccus which, although they are identical morphologically, are quite dissimilar in their behavior biologically. Any hope of success with serum or vaccine treatment must come from the employment of a serum from the actual type of the pneumococcus that causes the particular disease to be treated. Bacteriologists have succeeded in isolating four of the most numerous

types, and they are designated as Types I, II, III, and IV. Types I and II are the most common. It is found in animal experimentation that serum produced with one type will not immunize against another type of pneumococcus, nor will immunity gained with one type protect against infection with another. This is, of course, true with the active treatment of pneumonia with the serum. For some reason, there has been even less success with vaccine prophylaxis and vaccine treatment in this disease, although some success has been reported with the prophylactic treatment. The prophylactic vaccine dosage is given of 600 million dead cocci at seven-day intervals for three injections, given under the skin. For the treatment of active cases, the introduction of so many bacteria into an organism already overcome with them rather lowers the resistance than increases it. In all likelihood, this can be explained on the ground that the negative phase induced immediately on the introduction of the killed cocci is too profound, and is not followed by the positive phase so necessary for successful vaccination therapy.

But any success gained through the serum treatment of pneumonia has been almost entirely with the use of sera produced from Type I organism, and because this type comprises the greatest number of infections, it is advised to use serum from this type where the exact type cannot be determined. The manufacture of other types of serum is being discontinued for stock use because of their slight application. The use of polyvalent immune horse serum made from the many types of the pneumococcus has proved to be almost valueless, because the benefits that arise with serum treatment seem to depend wholly upon the employment of the specific serum indicated in the particular case. Either the exact type of coccus must be determined in the laboratory, or a chance must be taken with Type I serum. Even though disease caused by other types of cocci is not benefited by Type I, it is perhaps advisable that all cases on admission be given Type I serum until the exact type is determined. It is not at all unlikely that most of the failures with the use of immune sera come from using serum made from a strain not causing the particular infection.

Moreover, with this lack of marked success with the use of serum must be remembered the usual dangers of serum treatments—that is, the danger of serious protein sensitization when so

much foreign protein is introduced into the body. However, even this danger may be somewhat anticipated by the intradermal skin test for serum sensitiveness—serum sickness. The raising of a wheal on the site of the injection is an indication of this anaphylactic sensitiveness to the injection of foreign protein. The serum dosage is rather large. About 100 cc. are given intravenously every eight hours for three or four doses until there is a decided drop in temperature. At best, the serum treatment is applicable only to a limited number of cases,—where the exact type of organism causing the infection can be determined, and where there is no great anaphylactic objection to the introduction of foreign protein.

#### DEFINITION OF INFECTIVE STAGE OF VENEREAL DISEASE.

MANY requests are being received by the State Department of Health for an authoritative definition as to what is intended by the term "infective stage" of venereal disease, as used by this Department in the circular making these diseases reportable.

The term "no longer in an infective stage" is by no means a synonym of "cured." The syphilis patient who, for example, has had a few doses of arsphenamine may no longer be in an actively infectious state so far as the general public is concerned, yet he would be far from being cured. In order to give the practitioner something definite to go on, the following official interpretation of the term "infective stage" is offered for the purposes of reporting.

*Syphilis*—A patient suffering from syphilis shall be considered to be in an infective stage so long as he shows any symptom or lesion of primary or secondary syphilis, or any discharging lesion, of the tertiary stage.

*Gonorrhea*—A patient suffering from gonorrhea shall be considered to be in an infective stage until two negative laboratory tests have been obtained from specimens taken at least a week apart.

#### GRAVE OF A FAMOUS BRITISH SURGEON.

THE *Lancet* has recently published the following photograph of the grave of Sir Victor Horsley at Amara, Mesopotamia, where the distinguished British surgeon died in service, July 16, 1916. The grave is in the British Cemetery, on the fringe of a palm grove, the mound, consisting of earth, baked and cracked by the sun. The picture was taken by a Sergeant of the Royal Army Medical Corps, attached to an Indian General Hospital.



#### MEDICAL NOTES.

**SMALLPOX IN NEW YORK CITY.**—During the year 1917, there were fourteen cases of smallpox in the City of New York, eleven of them contracted out of town. One came from the South, eight from the West, one from Connecticut and one from up-state. Of the remaining three cases, one was closely associated with one of the preceding. The other two were in mother and son, and in these no definite connection with an earlier case of smallpox could be discovered. Six of the fourteen patients were Negroes.

During the past two months (January and February) five cases of smallpox have occurred in the City of New York. Two of these contracted the disease outside of New York City, one in Bristol, Pa., the other probably in Newark, N. J. A third case was traced to infection

by exposure to an earlier case. Four of the five cases were in Negroes.

While the total number of cases occurring in the city in the past few months is a little higher than usual, they need cause no uneasiness on the part of the public. Their occurrence calls attention to the fact that New York, as a center of industry, attracts large numbers of persons, some of whom bring infectious diseases into the city from distant points. These cases also show that the protection conferred by vaccination in childhood is of value for only a limited period. It should also be pointed out that a number of the smallpox cases which come in from outside sources or which develop in the city, travel about freely during the initial period of the disease, riding in public conveyances and otherwise coming in contact with large numbers of people.

**MEDICAL ASPECTS OF THE TOBACCO HABIT.**—In a paper read before the Association of Health Officers of Nova Scotia, (published in *The Quarterly Bulletin of the Department of Public Health of Nova Scotia*, Halifax, N. S., January, 1918) D. Fraser Harris, Professor of Physiology in Dalhousie University, gives an excellent résumé of the medical aspects of the tobacco habit. We believe that the following conclusions, presented by Professor Harris, will be approved by many physicians.

1. The substances in tobacco smoke which are injurious are probably oxidation products of nicotine and other alkaloids.

2. The smoking of tobacco is the more injurious the younger the person, hence young recruits suffer more readily from "tobacco heart" than older men.

3. The chewing of tobacco is much more injurious than the smoking of it, and ought to be discouraged.

4. Since what is injurious in tobacco smoke is absorbed more readily by inhaling than by smoking without inhaling, inhaling ought to be discouraged.

5. There is a marked idiosyncrasy towards tobacco in respect of the substances which raise the blood-pressure, cause irregularity of the heart and give rise to gastric acidity.

6. Those who have this idiosyncrasy ought not to use tobacco at all.

7. Those who do not have this idiosyncrasy may use tobacco in moderation with impunity.

**TYPHUS IN IRELAND.**—The *Lancet* quotes from the annual report of the Local Government

Board for Ireland, just issued, which states that the cases of typhus notified during the year ended March 31st, 1917, numbered 110, or practically the same as the previous year, when the number was 112.

"These figures, however, do not fully disclose the incidence of the disease, because, as the report adds, notification has not been universally adopted in Ireland, and, further, because the initial cases in outbreaks of typhus are liable to escape recognition. In urban districts the disease was prevalent in Belfast, where 46 cases were notified; unfortunately the source from which the infection was conveyed was not ascertained. Twelve cases were reported as having occurred in Dublin, where the outbreak was attributed to overcrowding and insanitary conditions. In rural districts the largest outbreak (25 cases) occurred in Oughterard rural district, and this was also attributed to the same factors as in Dublin. Smaller outbreaks occurred in Tuam, Killadysert, and Enniscorthy rural districts. The steps taken to prevent the spread of the disease seem, in general, to have been more effective than the administrative action in regard to the grossly insanitary conditions and domestic overcrowding which admittedly were associated with its appearance."

#### WAR NOTES.

**PETROGRAD DECIMATED BY DISEASE.**—It is reported that the population of Petrograd is being decimated by an outbreak of disease. The epidemic is attributed to extreme shortage of food and to all kinds of insanitary conditions. Various forms of typhus, as well as smallpox, are prevalent.

Moreover, extremely unsanitary conditions now prevail in the city, while all the organizations concerned with public health have either been abolished or have virtually ceased operations, owing to the revolution. There is no sanitary commission, there are no medical specialists, and there is no registration of diseases. Very few doctors are in practice and some of these threaten to go to Germany if the ignorant Russian proletariat doing menial work in the hospitals are permitted to continue to dictate to medical officers and trained nurses.

**MEASLES IN ARMY CAMPS.**—Measles epidemics are subsiding in both National Guard and National Army divisions, but pneumonia persists; according to the detailed health report for the week ending January 4, as made public by the Army Medical Corps. The tables show 109 deaths during the week in the National Guard,

80 due to pneumonia; and 167 in the National Army, 110 being due to pneumonia. The death totals for the previous week were 108 for the National Guard and 98 for the National Army.

**DEATHS IN U. S. ARMY FOR WEEK OF MARCH 8.**—Deaths among the troops in the United States regular army, National Guard and National Army, totalled 156 during the week ending March 8, an increase of 3 over the preceding week. Seventy-one of the deaths were from pneumonia.

The regular army had the highest total of deaths with 60, the National Army had 54, and the National Guard 42. The detailed report of the division of field sanitation, made public recently, says that the health of the troops continues satisfactory.

**WAR RELIEF FUNDS.**—On March 19, the totals of the principal New England War Relief Funds reached the following amounts:

Halifax Fund .....	\$697,979.32
Belgian Fund .....	665,521.90
French Wounded Fund.....	330,379.85
Syrian-Armenian Fund.....	293,404.78
Italian Fund .....	152,668.40
French Orphanage Fund .....	152,598.86
British Imperial Fund.....	116,903.29
Lafayette Fund .....	34,594.28

**AMERICAN TUBERCULOSIS REFUGE IN FRANCE.**—Report from Paris on March 16, states that the American Red Cross in France has initiated a plan of caring for the repatriated French tuberculates who are returning daily to their homes from behind the German lines.

"A village community and a family colony for tubercular refugees will be created outside Paris on a site where a group of Quakers are clearing the land and constructing 150 three-room and five-room houses. Each house has a porch and can be taken apart and transported to the devastated regions when the war is over.

Dr. William C. White, head of the tuberculosis bureau of the Red Cross and originator of the plan, says the Red Cross has established tuberculosis hospitals for men and for women, but this involves separating husbands from wives and parents from children. This is the first experiment of a family colony for tuberculosis sufferers to be tried on a large scale.

The Department of the Seine has loaned 50 acres of meadow and woodland for the settlement and the Society of Friends has provided architects to lay out plans for the village and the houses. The French Government will pay more than half the cost of maintenance and the American Red Cross will expend a large sum."

**AMERICAN WOMEN'S WAR HOSPITALS.**—Report from New York on March 16 announces a plan of the War Service Committee of the Medical Women's National Association in behalf of the American Women's Hospitals to raise a large fund for the establishment and maintenance of hospital clinics in the Allied countries, to be staffed throughout by American women physicians, surgeons, and lay workers. The fund will be expended under the authority of the Red Cross. The raising of the fund will be in charge of Dr. Gertrude A. Walker, a trustee of the Women's Medical College of Penn., and of Dr. Rosalie Slaughter Morton, chairman of the American Women's Hospitals.

#### BOSTON AND MASSACHUSETTS.

**WEEK'S DEATH RATE IN BOSTON.**—During the week ending March 16, the number of deaths reported was 289, against 266 last year, with a rate of 19.21, against 15.19 last year. There were 49 deaths under one year of age, against 36 last year.

The number of cases of principal reportable diseases were: diphtheria, 68; scarlet fever, 24; measles, 255; whooping cough, 40; typhoid fever, 1; tuberculosis, 54.

Included in the above were the following cases of non-residents: diphtheria, 6; scarlet fever, 3; measles, 5; tuberculosis, 2.

Total deaths from these diseases were: diphtheria, 2; scarlet fever, 2; measles, 3; whooping cough, 2; tuberculosis, 15.

Included in the above were the following non-residents: diphtheria, 1; scarlet fever, 2; measles, 1; tuberculosis, 1.

#### Obituary.

##### JOHN GEORGE BLAKE, M.D.

DR. JOHN GEORGE BLAKE was born in the County of West Meath, Ireland, on August 8, 1837, and died at his residence in Beacon Street, Boston, March 4, 1918. He came to Boston on a sailing vessel with his mother and brother in 1849, and lived on Purchase Street, in the Fort Hill district. He attended school, and at odd times worked for a well-known druggist in that vicinity. Then and there began his wide knowledge of drugs, which was a characteristic in after years.

He entered the Harvard Medical School in 1858, and was fortunate in attracting the favorable notice of Drs. O. W. Holmes, J. Mason Warren, Henry J. Bigelow, and Edward H. Clarke. These gentlemen, appreciating the energy and struggles of the young man, requested him to attend the summer term at the school, free of charge.

On graduating from the Medical School in 1861 he received the appointment as house pupil at the Massachusetts General Hospital and served for a year under Drs. Warren, Bigelow, and doubtless other members of that famous staff. So long as he lived, Dr. Blake had a warm place in his heart for his *alma mater*, the Massachusetts General Hospital.

On leaving the hospital, he took an office on Harrison Avenue, a popular residential section of the South End, and was soon in active practice. Early in the Civil War, Dr. Blake was appointed recruiting officer, and when an emergency call came for surgeons, he joined the Boston unit, and saw service after the second battle at Bull Run.

From the early days of his professional life, Dr. Blake was interested in hospitals. He had more or less to do in the establishment of the Carney and St. Elizabeth's Hospitals and served upon the staffs. When the Boston City Hospital was opened in 1864, Dr. Blake, as one of the visiting physicians, made the first visit on the medical side with his house physician, Dr. Clarence J. Blake. His connection with the hospital continued without interruption until his death, nearly fifty-four years. He served as visiting physician until the formation of a Gynecological Department, when he was appointed senior physician for diseases of women, and, finally, senior physician, which position he held to the close of his life.

Dr. Blake was an accomplished clinician. He kept abreast of the times, was prompt and careful in his diagnosis, faithful in his supervision, cheerful and encouraging in his prognosis, a host in the sick-room. His visits were a ray of sunshine to his patients.

As a clinical teacher, Dr. Blake was deservedly popular; practical, resourceful, enterprising; ready to adopt new methods that promised to benefit his patients. He was especially interested in medical students. His own experience enabled him to appreciate their trials and their limitations, and he did much to help them, even after they had received their degree and

started in practice. For many years it was his custom to employ recent graduates as assistants and, as a result, several physicians owe their favorable beginnings to his assistance.

Dr. Blake's private practice, both family and consulting, was extensive. His days and nights were fully occupied. His faculty for turning off work was remarkable. There were few idle moments. He once told the writer that, aside from his ordinary duties, he had attended five confinements in a single day. His capacity seemed to be limited only by the time in hand.

While carrying one of the largest practices in the city, he still found time for other activities. He served upon the Boston School Committee for sixteen years, much of the time as its chairman. He was also a water commissioner, director of the South End National Bank, and trustee of the Union Institution for Savings.

Dr. Blake was a member of the Massachusetts Medical Society, the Boston Society for Medical Improvement, and the Obstetrical Society. He was especially interested in the last-named society and was a constant attendant at its meetings for many years. Not a frequent writer for the medical journals, yet his papers were always interesting. He contributed papers to the History of the City Hospital, and also to various reports of that institution, issued from time to time. He was an independent Democrat in politics, and could be depended upon to support those measures which he thought would result in benefit to the people.

Dr. Blake's chief pastime was athletics, being especially fond of rowing. Many an hour was spent upon the Charles River with his sons and friends in that sport. He was also a constant attendant at the gymnasium of the Boston Athletic Club—a custom that undoubtedly conduced to his buoyant spirits his good health and long life.

In 1865 Dr. Blake married Miss Mary Elizabeth McGrath, who died eleven years ago. She was widely known as a writer for many years. He is survived by six of the eleven children: Miss Marie Blake, who has made a happy home for her father since her mother's death; the sons are Dr. John Bapst Blake, one of the surgeons-in-chief of the City Hospital; Dr. Gerald Blake, of the medical staff of the Massachusetts General Hospital; Arthur Blake, an ensign in the U. S. Navy; Robert Fulton Blake, of the Submarine Signal Company; and Frederick Blake.

Personally, Dr. Blake was cheerfulness personified. Genial, alert, enthusiastic, social in his instincts, he was naturally popular and had hosts of friends. He was fortunate in the possession of a peculiarly sunny temperament—a most desirable quality for any physician—that will always endear his memory to his many friends and patients. He served three generations of patients, an experience shared by few in any profession. He accomplished an enormous amount of good work, and won the respect and esteem of the community in which he passed his long life. His career is an encouraging example of achievement that is possible for those who have ambition, and the capacity and determination for continuous, faithful service in their chosen callings.

GEORGE W. GAY, M.D.

### Miscellany.

#### NOTICE.

**LABORATORY COURSE FOR WAR SERVICE, AMERICAN WOMEN'S HOSPITALS.**—With the coöperation of the War Service Committee of the Medical Women's National Association, a second course in medical laboratory work is offered to applicants who have the preliminary training in science and scientific methods obtained in a four years' college course or its equivalent. The object is to fit workers for war service in medical laboratories in this country and in Europe, whether they take the place of men who have been called to the front, or go themselves as members of a unit which may be called for active service here or abroad.

Dr. William H. Park of the New York University and the City Health Department, Dr. Anna W. Williams of the Bureau of Laboratories of the New York City Board of Health, and Dr. Elise L'Esperance are in charge of the course, which will extend over a period of three months, requiring six hours' work each day. The training thus acquired should fit students to act not only as technicians, but as interpreters of the results obtained. The fee is \$75.00.

The New York University and the Health Department have offered the use of their Laboratories, also Cornell Medical College.

Classes will be limited to about twenty (20). Work will begin at 9.30 a.m. on Monday, April 1, 1918, in the bacteriological department of the New York University, 1st Avenue and 26th Street.

Application may be made to Dr. Anna W. Williams, Research Laboratory, foot of East 16th St., New York City.

#### MICROBIOLOGY.

##### I. General Microbiology, including

- (1) The classification and general characteristics of pathogenic microorganisms (bacteria, molds, protozoa and microscopic worms).
- (2) General methods used in examining and cultivating microorganisms.
- (3) The relation of microorganisms to disease.

##### II. Specific Microbiology, including

- (1) A study of all the more important pathogenic microbes, with special reference to microscopic diagnostic methods of these and of the infectious diseases in which no specific microbe has yet been found.

- III. Microbiology in Hygiene and Therapy, including
  - (1) The examination of water, milk, air, soil, foods.
  - (2) The use of disinfection.
  - (3) The preparation and uses of serums and vaccines.

#### CLINICAL PATHOLOGY.

- I. Chemistry and Microscopy—of the blood, gastric contents, feces, urine, spinal fluid, in health.
- II. Chemistry and Microscopy—of the blood, gastric contents, feces, urine, spinal fluid and all exudates in disease.

#### RECENT DEATHS.

**EDWARD PAGE, M.D.**, formerly treasurer of the Massachusetts Dental Society for twenty-five years, and the last surviving member of the first dental class to graduate from Harvard University, died recently at the Home for Aged Men. Born in Groton, Dec. 4, 1826, the son of Abel and Asenath Page, he received his early education in the common schools of that town. He was graduated from the Harvard Medical and Dental Schools, was one of the organizers and first president of the Harvard Dental Alumni Association, and treasurer from 1874 to 1880. He became a member of the Massachusetts Dental Society in 1869, and served as its treasurer until 1897, when he was transferred to the honorary roll of that organization. He was also a member of the New England Dental Society and the Dental Protective Association of the United States.

**RANSFORD DELOS CANEDY, M.D.**, one of the best-known practising physicians in northern Berkshire, died at his home in North Adams, March 10, 1918, of pneumonia. Dr. Canedy was 45 years old, and had spent his entire life in North Adams. He was a graduate of Drury School and of the College of Physicians and Surgeons at Columbia in 1896. Before beginning the practice of medicine he enjoyed considerable fame as a violinist of extraordinary attainments, and was frequently heard in concerts in North Adams. His rise in the medical profession was rapid, and he served several times as a member of the board of health, part of the time as chairman. Last fall he was appointed by Governor McCall as a member of the Exemption Board for District 1, the headquarters of which is North Adams. He also acted as examiner of the drafted men, and had spent most of his time on draft work for the past few months. He was a brother-in-law of the late W. Caldwell Plunkett of Adams, who died only a few weeks ago. He was, perhaps, one of the most popular physicians in this city and was possessed of a very attractive personality. He is survived by a widow and one daughter.

**CHARLES H. GERRISH, D.M.D.**, for half a century a leading dentist of Exeter, N.H., died recently at the Carney Hospital, South Boston, at the age of 73 years. Dr. Gerrish was a foster son of the late Mr. and Mrs. Ira Burnham, who were long in charge of the academy dormitory, Abbott Hall, at Phillips Exeter. This was his boyhood home. Dr. Gerrish was captain of the team from the Exeter Gun Club, which won the first international clay pigeon tournament, held in Chicago in 1884. He leaves a wife and one daughter.

**JOSE L. HIRSH, M.D.**, a noted specialist in children's diseases, died last week in Baltimore, of heart disease. Dr. Hirsh was born in Philadelphia in 1871.



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For Bulletin or further information address DR. JOHN HENRY WYCKOFF, Secretary, 26TH STREET AND FIRST AVENUE, NEW YORK CITY.

## MEDICAL DEPARTMENT

Session 1917-1918 begins Wednesday, September 26, 1917.

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